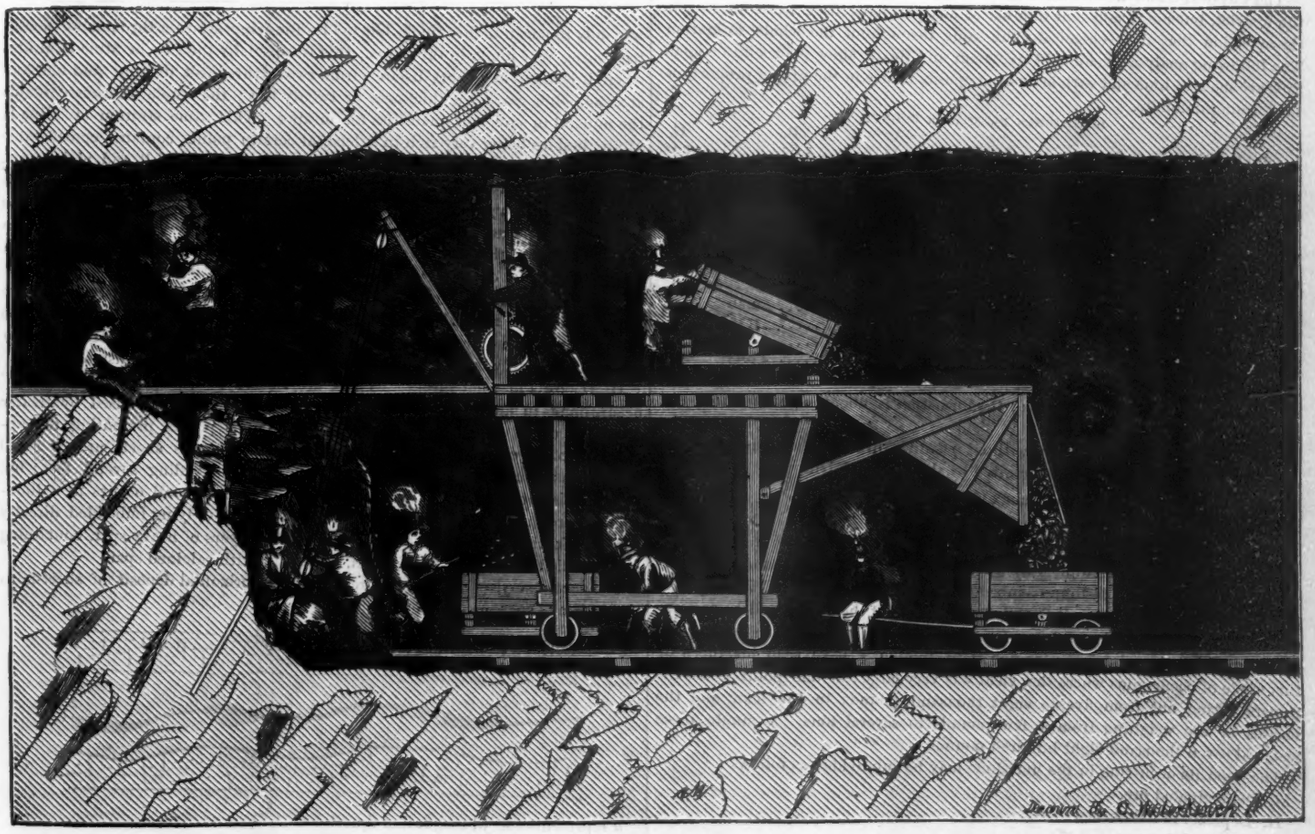
THE ENGINEERING AND MINING JOURNAL.

VOL. XVIII.—No. 13. NEW YORK, SATURDAY, SEPTEMBER 26, 1874. PRICE 10 CENTS PER COPY.

Tri-Nitro Glycerine at the Hoosac Tunnel.*

THIS very interesting and useful little book gives an immense amount of information on the subject of Nitro Glycerine and the various explosives, dynamite, quick powder, dualine, litho-fracteure, mica blasting powder, &c., which are merely mixtures of nitro-glycerine with some inert substance.

The enormous energy of nitro-glycerine makes it by far the most effective explosive we are acquainted with, (if we except liquefied protoxide of azote,) and a better acquaintance with its properties and with the necessary precautions to be observed in using it, which a careful perusal of this book affords, will tend to its more general introduction, which will be to the benefit of mining interests gene-



rally. The chemical composition of tri-nitro-glycerine is expressed by the following formula: $C^3 H^5 O^2 \left.\begin{matrix} NO^4 \\ 2\,NO^4 \end{matrix}\right\} O^4$. It requires the greatest possible care in its manufacture, or rather in its purification. Most of the terrible accidents with which we are accustomed to associate nitro-glycerine, were undoubtedly due to the imperfect purification of the compound which thus contained within itself the seeds of decomposition and spontaneous explosion.

MR. MOWBRAY, whose experience in the manufacture and use of nitro-glycerine at the Hoosac Tunnel probably exceeds that of any other manufacturer in the world, has found that pure nitro-glycerine will congeal at 45° F., while the impure article solidifies at a temperature of 50° F. In its frozen state, contrary to what has generally been supposed, nitro-glycerine is perfectly safe and will explode only with the greatest difficulty. Mr. MOWBRAY, therefore, where possible, has it packed with ice for transportation. He has never had an accident in transportation.

One cause of accident in blasting, but little understood, and which applies to powder as well as nitro-glycerine, is thus stated: "The blaster, not aware that he is a walking charge of electricity, proceeds to his work, inserting cartridge after cartridge of nitro-glycerine, until he comes to the last, which is armed with the electric fuse. The moment his hand touches one of the naked wires, the current passes through the priming, and explosion follows. Let a blaster, before he handles these wires, invariably grasp some metal in moistened contact with the earth, or place both hands against the moist walls of the tunnel." * * * *

"Above all, do not ventilate, by allowing a free blast of air through a rubber connecting pipe, *until after the electric connections have been made and the blast fired.*"

Our own experience, which fully confirms the claims of nitro-glycerine to much greater strength than any other explosive, has yet given us a preference for the dry over the liquid explosive. Mr. MOWBRAY appears to have found the same objections to the use of the liquid, for he has also his patent "mica blasting powder," which is finely divided scales of mica saturated with nitro-glycerine.

The above cut shows very clearly the method of carrying on the work at the west end of the Hoosac Tunnel. The tunnel was driven in two benches, the heading being kept some 500 ft. in advance of the bench-work. "The average of the work may be said to have consumed two to three pounds tri-nitro-glycerine per cubic yard of rock in the headings, and from six to twelve ounces per cubic yard at the bench-work and stopes. This expenditure was bettered in 1874 by greater care and attention on the part of the blasters, and by the substitution of mica blasting powder." We will refer to this subject on another occasion.

* A Pamphlet by GEO. M. MOWBRAY. For sale by D. VAN NOSTRAND, New York.

THE ENGINEERING AND MINING JOURNAL.

NEW YORK, SATURDAY, SEPTEMBER 25, 1874.

ROSSITER W. RAYMOND, Ph. D., Editor.
RICHARD P. ROTHWELL, C. E., M. E.,
Editor of the Coal and Iron Department.

The Engineering and Mining Journal is devoted to Mining, Metallurgy and Engineering. Communications on these subjects will always be welcome.

It is the Official Organ of the American Institute of Mining Engineers, and it alone publishes the valuable papers read before that influential society.

Correspondence and general communications and books for review should be addressed to the Editors. Business communications should be addressed to the Secretary.

Remittances should always be made by Post-Office Orders or Bank Drafts, made payable to WM. VENTZ, Secretary.

Subscription $4 per annum; $2.25 for six months, in advance.

Advertising Rates. Inside pages 25 cents per line each insertion. Outside pages 40 cents per line. Special reduced rates will be given on application for advertisements extending over a long time or occupying a large space.

The legal rate of Postage on the ENGINEERING AND MINING JOURNAL addressed to its regular subscribers, is 20 cents per annum, or 5 cents per quarter, PAYABLE IN ADVANCE. Subscribers who receive their copies by letter-carriers will please hand the annual or quarterly postage to the carriers, taking their receipts. If any higher rates are demanded, report the facts to the local Postmaster. The postage on copies directed to subscribers in New York City has been prepaid by the publishers.

THE SCIENTIFIC PUBLISHING COMPANY.
WILLIAM VENTZ, Secretary,
P. O. BOX 4404. 27 Park Place, New York.

CONTENTS FOR THIS WEEK.

Tri-Nitro-Glycerine at the H osac Tunnel.	193	The Iron Trade and the Bulletin	196
On the Occurrence of the ead Ores in Missouri	194	Jean Elie De Beaumont	195
Pennsylvania Railroad Coal Lands	194	Recent Progress in Economy of Fuel	197
A New Form of Wagon Drop for Blast Furnaces	195	COAL TRADE REVIEW	198
Wastes of Coal in Mining	195	Review of the British Coal and Iron Trade	200
Wages at Blast Furnaces	195	IRON MARKET REVIEW	201
Consumption of Coal by the Iron Industry	195	Metals	202
Notes	195	New York Stock Market	202
EDITORIALS:		Boston Stock Market	202
Quick Transit	196	San Francisco Stock Market	203
		American Institute of Mining Engineers	203
		Advertisements	203

WE have pleasure in announcing the arrival in this country of Mr. I. LOTHIAN BELL, the distinguished English metallurgist. He purposes spending some weeks here, in visiting our iron works and mines, and has expressed his intention of attending the next meeting of the American Institute of Mining Engineers, of which he is one of the four honorary members. In anticipation of this visit, the Council of the Institute has deferred announcing the time and place of meeting, in order to meet the convenience of our distinguished visitor. Mr. BELL has stated, however, that he will make his engagements to suit the convenience of the Institute. It is to be hoped our members—so many of whom are themselves iron manufacturers—will come in force to the meeting, to welcome one who has done more than any other living scientist to throw light upon the metallurgy of iron, and whose investigations are of scarcely less value to our than to his own country. It is also desirable that as many of our members as possible should prepare papers for the next meeting, that we may make the occasion both interesting and instructive to all concerned.

WE take pleasure in calling attention to the circular of the Colorado Bureau of Mines, published in another column. Enterprises of this kind have been frequently started, and have as frequently failed. The trouble usually is that they are forced to become speculative, or die; and in this dilemma they do just the former—and then the latter. It remains to be seen whether there is business enough in the legitimate transfer of mining property in Colorado to maintain a perfectly neutral and impartial intermediate agency between purchasers and vendors. Professor HERR, the Superintendent of the new Bureau, was a graduate of West Point, and late a professor of engineering at the Lehigh University in Pennsylvania. We trust he will be able to make the business profitable and honorable to himself and the Territory. Certainly it will be in his power, by the collection and preservation of valuable information, to render substantial service to the mining industry.

Quick Transit.

THE question of quick transit has probably received more fruitless attention than any other which has of late years agitated the good people of New York. Every scheme proposed has been advocated by its admirers, apparently on purely personal grounds, and consequently, outside of those directly interested in the profits of the enterprise, each project has found but few supporters, for it enlisted but little confidence. We hail with satisfaction the appointment by the Society of Civil Engineers of a committee of distinguished engineers to investigate the necessary conditions of success, and to recommend plans for—

First—The best means of rapid transit for passengers; and

Second—The best and cheapest methods of delivering, storing and distributing goods and freight, in and about the City of New York, with instructions to examine plans, and to receive suggestions such as parties interested in the matter may choose to offer, and to report on or before the first day of December, 1874.

Messrs. O. CHANUTE, M. N. FORNEY, ISAAC C. BUCKHOUT, CHARLES K. GRAHAM and FRANCIS COLLINGWOOD were appointed such Committee.

The recommendation of such a body as the Society of Civil Engineers—the highest authority in the land—will deservedly carry great weight, both with the public and the Legislature; and it would be well for the city if the decision on these important questions were left entirely with the Society. In any event, it is tolerably certain that no project that has been condemned, or that has not been recommended by the Society, can now be saddled on the city, and it will therefore be to the interest of each of the rival projects that its advantages be laid before this Committee. We trust the investigation will be the means of bringing out some practical plan, and confer on the suffering people of New York the quick transit so long and so ardently desired.

Information on the above subjects is asked for, and due credit will be given for all aid rendered to the Committee.

In referring to plans proposed to accomplish these objects, it is particularly desired to ascertain accurately—

First—The route and location proposed, and the reasons therefor.

Second—The character of structure proposed in various parts of the city.

Third—A close estimate of the cost in detail.

It is greatly preferred that all communications shall be in writing, addressed to G. LEVERICH, Secretary, 63 William Street, New York.

The Iron Trade and the Bulletin.

The *Bulletin* of the Iron and Steel Association contains, in its issue of the 17th inst., an editorial on "THE QUESTION OF WAGES," in which occurs the following statement:

"There are some intelligent persons professing to represent the iron men who suppose it possible that we can so far reduce the cost of producing iron in this country that the iron interest can do without a protective tariff and still flourish. The ENGINEERING AND MINING JOURNAL, the organ of the American Institute of Mining Engineers, is an advocate of this theory. It professes no love for protection, but expresses a warm attachment for the policy of reducing the cost of production. We have looked into this policy, and have come to the conclusion that it means but little else than a reduction of wages to the European standard. It may not be intended by its advocates to have precisely this effect, but that is exactly what it means. There is no other way of materially reducing the cost of production."

Our views on this question have been frequently and clearly expressed in our columns. We do not discuss the tariff question; much less do we advocate free trade; but we believe that the interests of the iron trade are better served by advocating economy, good management, and the intelligent application of the teachings of science to the manufacture of iron than in lobbying for increased tariffs, and thus keeping the industries of the country in a continual state of suspense and instability. The *Bulletin* must certainly admit with us that, under the stimulus of enormous, abnormal profits on iron, furnaces were erected where they never should have been; and that not a few works in this, and, for that matter, we suppose in every country are ignorantly, wastefully, and even dishonestly managed. It can scarcely be denied that, as we asserted, a great part of the periodical agitation for additional protection is made by, or in the interest of, these wasteful works. Such additional protection, as we have pointed out, is then nothing but a Government sinking fund for ignorance and incapacity.

The ground the ENGINEERING AND MINING JOURNAL has taken, and the movement it has initiated, is *for the more economical production of iron*. We desire to interest our iron makers in the progress which has taken place, and is constantly taking place in the metallurgy of iron, being fully convinced that the development of our iron trade to the proportions which our unrivalled resources of fuel, ores, the means of living, and the intelligence of our people not only warrant, but make inevitable, will force us to supply markets outside the limits of this country. The question is now very different from what it was a few years ago, when we could not supply our own markets. To-day we have a productive capacity beyond our normal consumption; and it will always continue so. Hence, if we cannot make iron so cheaply as to enable us to send our surplus out of the country, we must expect either a recurrence, at short intervals, of high and extremely low prices, with the periodical stoppage of works and failure of the weaker members of the trade, or else a combination of the men, or the masters, or both, to cause a curtailment of production, and regulation of prices in some such manner as is now being done by the Anthracite Combination. We do not believe this remedy for the prevention of violent fluctuations in the business and in wages can possibly be applied; and most men of intelligence believe with us that moderate wages, with steady work, are far more desirable than very high wages followed by periods of idleness, which reduce the average income of the workmen.

The diffusion of education, the growth of intelligence, and the constantly increasing facilities of intercommunication in civilized countries, are making the rate of wages more uniform, not by lowering them here so much as by raising them abroad. During the past few years we have seen thousands of our miners and ironworkers returning to England, because the more constant employment there, at wages almost as high as here, made it more profitable to them there than here, for the time being. The cry of "competition with the pauper labor of England" has no longer the force it had some years ago. We have always maintained the right of the workman to a fair recompense for his labor. The only difference

between us and the *Bulletin* on this point is that our solicitude for the laborer is constant, and does not ebb and flow with the Sessions of Congress.

The price of labor is like that of iron or any other commodity in the market; it cannot be kept up artificially (except by such a combination as we have in the anthracite trade) but must depend on supply and demand. Now, we have never heard any one advocate a protective tariff on the importation of laborers as a means of keeping down the supply and keeping up the price; and, hence, the demand for labor and its price must depend directly on the development we give to such industries as that of which we speak.

The chief difference between our views and those of the *Bulletin* is that it believes "there is no other way of materially reducing the cost of production of iron except by a reduction of wages to the European standard," while we believe that less could be done towards reducing cost by the reduction of wages than by the application of a more thorough knowledge of the metallurgy of iron, of more intelligence, and, in some cases, honesty, in the establishment and management of our works. Why should one furnace use two tons of anthracite to the ton of pig iron, while another working similar ores requires but 1¼ to 1½ tons to produce a ton of iron of equal quality? Why should one furnace produce per cubic yard capacity, per day, fifty per cent. more iron than its neighbor from the same stock? What now enables us to make steel (Bessemer) rails at a small fraction of what steel would have cost when wages were still lower, before the introduction of this improvement in manufacture? Why is BLAIR of Pittsburgh making iron at a much less cost than it has heretofore been made?

AS MR. ABRAM HEWITT remarked in his able address on "Iron and Civilization" before the Institute of Mining Engineers, it is the mission of science to reconcile cheapness of production with the maintenance of fair wages to the laborer. This we firmly believe; to this beneficient work we devote ourselves. While the *Bulletin* seeks temporary and violent remedies for the periodical fainting fits of the trade, we labor for a permanent condition of health, which shall make such periods impossible. In short, protection is the hobby of the *Bulletin*, and progress is ours.

Jean Elie De Beaumont.

A PARIS telegram says that M. ELIE DE BEAUMONT, the noted French geologist, is dead. This eminent scientist was born in France in 1792, and received his education at the great mining and technical schools of Paris. In 1832, he became one of the professors at the College of France, and consequently attained in the engineering service the rank of Inspector-General of the first-class. He succeeded CLAUDE LELIEVRE as member of the Academy of Sciences, and became permanent secretary thereof at the death of FRANÇOIS ARAGO in 1825. NAPOLEON III. made him a Senator and Commander of the Legion of Honor. The late scientist was nearly all his lifetime engaged in the geological survey of France, which was begun and carried out at the national expense. Associated with M. DUFRENOY the began this great project in 1825, and after careful researches and explorations, he succeeded in making a map of France, on which the geological character of the country was clearly defined. While thus engaged, M. ELIE DE BAUMONT was an idustrious investigator of the causes which have led to the changes on the earth's surface, and gave special attention to the laws governing the formation of mountains. He finally taught that mountain chains are to be classed according to the direction of their range, all those lying parallel with the same great circle of the earth, wherever they may be found, having been uplifted suddenly during the same geological epoch. He described in the last edition of his work on this subject the features of no less than 95 systems of mountains, and the facts he collected added largely to the geological knowledge of the day. M. ELIE DE BEAUMONT'S scientific works were numerous, and prove him to have been a man of great attainments and diversified information.

Recent Progress in Economy of Fuel.

BY CAPTAIN C. E. DUTTON, U. S. Ordnance Corps.

[Abstract of a communication to the Washington Philosophical Society.]

CONCLUDED FROM PAGE 181.

THE use of liquid fuels has made but little progress, and for the best of reasons. It can seldom be an economical process, however perfect the combustion, or however high the temperature. Owing to the very large percentage of hydrogen contained in them, the calorific power is exceedingly great, and when burned under advantageous circumstances the possible temperature is immense. It is conceivable that exigencies may arise where this great temperature would more than compensate the first cost of the fuel; but such cases must be rare, and if liquid fuel ever finds a field of usefulness, it will be an exceedingly narrow one. To obtain this high calorific equivalent, it is necessary to produce the most thorough intermixture or diffusion of oxygen with the hydrocarbon gases; otherwise much of the carbon will escape combustion, and it has, in all cases, been found necessary to volatilize the liquid before admission to the furnace, and even there special precautions must be taken to secure a rapid intermixture with air at the moment of admission. This is best accomplished by means of two sets of gas jets—one delivering the fuel, the other air, the two currents interlacing and being injected with considerable velocity.

A curious subject is the use of jets of steam for facilitating combustion. This is not unfrequently practiced, and there is a most remarkable diversity in the professed objects for which it is done. Thus there reappears, periodically, a grand invention for decomposing water and recombining its elements, with an enormous development of heat, from "a fuel costing nothing." A steam jet is often used as a substitute for a blowing-fan, though ordinarily nothing more is claimed for it than the motive power of the blast; and its application to boiler-fires, and even to the cupola furnace, has been attended with a certain measure of success. The inference first presenting itself is, that the steam is merely a foreign body in the volume of combustion, and by its great specific heat reduces seriously the temperature of the flame. But this would be a hasty conclusion, and overlooks some important facts. These jets of steam are usually discharged from small nozzles under a very considerable pressure, and produce an intense agitation of the air. We might recall here the celebrated analyses of Sir W. R. HAMILTON and of HELMHOLTZ, of the vortical motion of fluids and their demonstrations of the remarkable persistene of vortices in a fluid so nearly perfect as air. An air-blast in a state of intense agitation from the discharge of a steam jet is obviously much better adapted for rapid diffusion and intermixture with combustible gases than the comparatively quiet streams of air drawn through by the draught. Hence we may be prepared to find that, generally, the use of the steam jet is not attended with the reduction of temperature which might at first have been anticipated; but, on the contrary, its cooling effect is doubtless, in many cases, more than offset by the more complete combustion of the fuel, with a supply of air rather less than that ordinarily used in the grate. This view is apparently confirmed by practical results. We may perceive here the reason why the "water-gas" process, which is supposed by its inventors to decompose water, and recombine its elements, really gives a very intense heat whenever the steam jet is turned on. The liquid fuel has a very high calorific power, and the complete combustion of the hydrocarbon gases more than compensates the cooling influence of the steam. The process, however, is far from economical.

An interesting plan was suggested, some years ago, by M. CH. SCHINTZ, for the partial elimination of nitrogen from the combustion. As this gas constitutes four-fifths of the volume of air, it is quite obvious that an elimination of one-half of it would augment very greatly the temperature of combustion. The process proposed by M. SCHINTZ is not a practical one, for reasons which will immediately suggest themselves; but it contains a suggestion of great value, which may sometime prove invaluable. In this furnace, common limestone is calcined by the waste heat in a suitable retort, or chamber. The carbonic acid which is thus expelled passes through a second chamber, containing coal, which is also heated by waste heat. The CO^2 taking up another atom of carbon, becomes CO. Thus an inflammable gas is obtained unmixed with nitrogen, and to convert it into CO^2 again, only one-half the usual quantity of oxygen is required. The temperature due to this process (assuming it to operate perfectly) would be theoretically greater than that of the Siemens, where the nitrogen from the generator enters with the gas, and where the heavier hydrocarbons are condensed, and do not reach the hearth.*

This project of M. SCHINTZ is mentioned, not because any practical value is attached to it in its present shape, but because it involves a sound principle. For many of the processes of iron and steel metallurgy, a high temperature means efficiency and economy, and the elimination of nitrogen, to a sensible extent, must (other things being equal) be attended with a marked increase of temperature.

Of all modern inventions in this field, the most important and successful is the regenerative principle which was first realized by Mr. SIEMENS. The conception was a most brilliant one, and worthy of one of the greatest inventors of the age. It has placed in the hands of the metallurgist an instrument as important as the steam-hammer, and has created new and immense possibilities. We cannot sufficiently applaud the ingenuity and skill which has succeeded in arresting the subtle agent, heat, after it has passed through the furnace and failed to do its whole duty, entrapping it on its outward course into space, and bringing it back to perform its function. The operation of the Siemens furnace is too well-known to need description. There are some points, though, to which allusion might be made. It seems like mere captious criticism to find defects in such a valuable device as this, and to talk about waste of fuel in a furnace which is, in reality, very economical, when compared with those which it has replaced. Yet it is absolutely certain that there is a great waste of heat which ought to be saved, and that, as this furnace is now constructed, the advantages of the regenerative principle are not obtained without unusual sacrifice in other parts of the process. A large portion of the heat generated in the producer is thrown away in the long flue leading to the furnace, in order to extract from the fuel its condensible hydrocarbons (its most valuable constituents for calorific purposes), and to give the gases propulsion. The gases are also mixed with a gratuitous addition of water, and, quite probably, with a notable percentage of carbonic acid. Upon entering the furnace, the gaseous fuel is, therefore, diluted with nitrogen, water and carbonic acid, and robbed of its hydrogen, and the low temperature due to this mixture must be compensated wholly by the regenerators. While the high temperature actually obtained demonstrates the efficiency of Mr. SIEMENS'S device, we may be sure that far greater economy of fuel might be obtained if it were practicable to generate the gaseous fuel in a more concentrated form. The present producer is a crude device, and very wasteful—a remark which may bring forth a challenge to devise a better one. But this is not the critic's business. His mission ends when he has pointed out merits and defects,

* The temperature added by the regenerator of the Siemens furnace does not average more than about 300° C. during a whole "shift," and is in current practice probably not above 250° C. In M. SCHINTZ'S process, the gas would enter the furnace with an initial temperature of about 495° C.

Jaw Crushers.
Steel Crushing Rolls.
Concentrators.
Revolving Screens.
Elevators.
Hangers and Shafting.
Pulleys and Belting.
Laboratory Crushers.
Laboratory Concentrators.

STEPHEN R. KROM,
MECHANICAL ENGINEER,
MANUFACTURER OF MACHINERY FOR
CRUSHING, SCREENING, AND CONCENTRATION OF ORES,
For Pamphlets and information, address: S. R. KROM, 206 Eldridge St., New York.

PLANS FURNISHED FOR Ore Dressing Works.

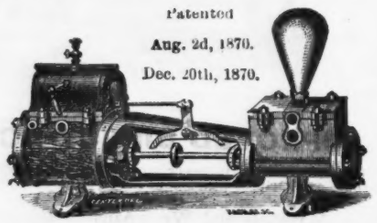
NASON'S VERTICAL TUBE RADIATORS

IN VARIOUS SIZES AND PATTERNS.

THE NASON MANUFACTURING CO., 61 Beekman street, corner of Gold street.—WROUGHT and CAST IRON PIPES; all kinds of STEAM and GAS FITTINGS; Apparatus for WARMING and VENTILATING BUILDINGS. HENRY R. WORTHINGTON, Prest.
C. W. NASON, Vice-Prest. W. S. LEDYARD, Treas.

THE SELDEN DIRECT-ACTING
STEAM PUMP
A. CARR, Manufacturer & Proprietor.

Patented
Aug. 2d, 1870.
Dec. 20th, 1870.



Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to ALL PURPOSES for which Steam Pumps are used.

AS A MINING PUMP
It is unsurpassed. Also,

STEAM, GAS AND WATER PIPE, BRASS WORK.
Steam and Water Gauges, Fittings, etc. etc.

CARR PATENT STEAM RADIATOR.
Send for Price-List and Circulars.
Address A. CARR.
43 Courtlandt Street, New York.

BAXTER
STEAM ENGINE

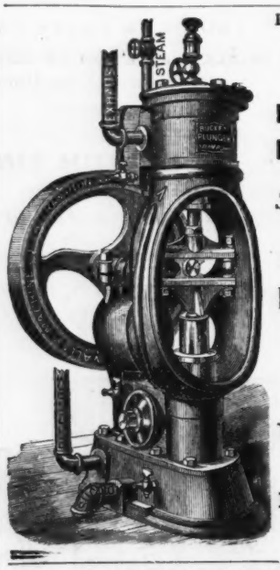
FOR SALE BY
WILLIAM D. RUSSELL,
19 PARK PLACE, NEW YORK.
SEND FOR CIRCULARS & PRICE LIST

Niagara Steam Pump Works.

This Pump has taken the first premium at every Fair in the United States where there has been a practical test

CHARLES B. HARDICK,
No. 23 ADAMS STREET, BROOKLYN, N. Y.,
Sole Manufacturer of
HARDICK'S PATENT DOUBLE-ACTING
STEAM PUMPS AND FIRE ENGINES.
Patented in England, Belgium and France. Send for circular. feb-13-1y

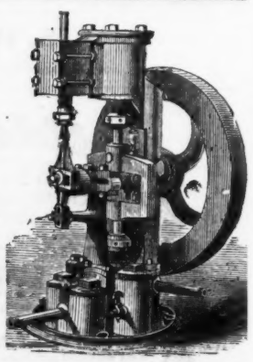
Improved, 1874.



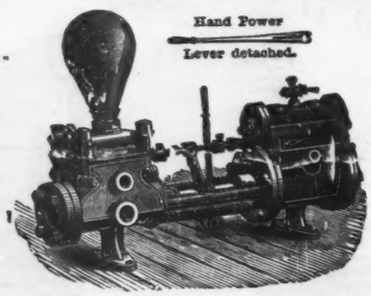
BUCKET-PLUNGER
Steam Pumps
ALWAYS RELIABLE

MADE
BY THE
Valley Machine
COMPANY,
Easthampton,
Massachusetts.

J. CLAYTON'S
Patent Crank and Fly Wheel
UPRIGHT
PUMP,
Strong, Durable, and well made, a Double-Acting
Steam Pump.
Price only $95.
JAMES CLAYTON,
14 Water st.
Brooklyn, N. Y.



Hand Power
Lever detached.



GEORGE F. BLAKE & CO.,
MANUFACTURERS OF BLAKE'S PATENT
STEAM PUMPS,
No. 79 LIBERTY STREET, NEW YORK.
Factory 61 Chardon St., Boston, Mass.

A specialty made of the manufacture of DOUBLE-ACTING PLUNGER PUMPS for mining purposes—combining economy of space, capacity, and great durability. All wearing parts made of compos tion metal.
Also, Boiler Feed Pumps, Fire Pumps, Tank Pumps, Wrecking Pumps, etc., etc.
Send for Illustrated Price Circular. m26tjm

HYDRAULIC WORKS.
MANUFACTORY,
BROOKLYN, N. Y.
Steam Pumping Engines, Single and Duplex, Worthington's Patent, for all purposes, such as Water Works Engines, Condensing or Non-condensing; Air and Circulating Pumps, for Marine Engines; Blowing Engines; Vacuum Pumps, Stationary and Portable Steam Fire Engines; Boiler Feed Pumps, Wrecking Pumps,
MINING PUMPS.

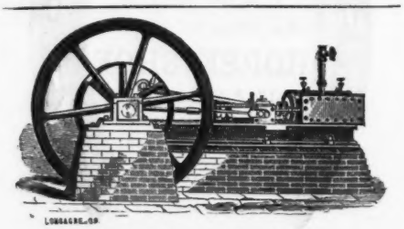
Water Meters, Oil Meters; Water Pressure Engines.
Steam and Gas Pipe, Valves, Fittings, etc. Iron and Brass Castings.
Send for Circular.
H. R. Worthington,
Jan2-1y 239 Broadway, New York.

The Pulsometer.

The simplest, most durable and effective Steam Pump now in use. Will pump gritty or muddy water without wear or injury to its parts. It cannot get out of order.

BRANCH DEPOTS:
104 Sudbury street, Boston,
1327 Market street, Philadelphia,
59 Wells street, Chicago,
South Western Exposition, New Orleans,
811 and 813 North Second street, St. Louis.

C. HENRY HALL & CO.,
20 Cortlandt Street, New York.



CAMPBELL & RICKARDS,
BUILDERS OF ENGINES AND TRAVELING CRANES,
607 and 609 Commerce street, Philadelphia, Pa.
Estimates furnished on application.

WOOD ENGRAVING
EXECUTED AT THE OFFICE OF
The Engineering and Mining Journal,
27 PARK PLACE, NEW YORK CITY.

RICHARD P. ROTHWELL
Mining Engineer.
Office of the Engineering and Mining Journal,
27 PARK PLACE, NEW YORK.
Surveys, Examines and Reports on *Coal* and *Iron* Properties and Mines.
Advises on all questions of the Working and Management of Mines.

MAYNARD & VAN RENSSELAER,
Mining and Metallurgical Engineers,
Experts in Iron, Analytical Chemists,
24 Cliff Street, New York.
GEO. W. MAYNARD, SCHUYLER VAN RENSSELAER.

STUART M. BUCK,
MINING ENGINEER,
Kanawha and Ohio Coal Company.
COALBURG, WEST VIRGINIA.
Examines and reports on Coal Lands, and consults on the opening and working of Mines.

IRVING A. STEARNS,
MINING AND CIVIL ENGINEER,
Wilkes-Barre, Penn'a.
Examines and Surveys Mines and Mineral Properties.
Furnishes Working plans and Estimates for mines, improvements, and superintends the establishment and working of mines. Dec. 16-tf

W. B. COGSWELL,
Civil & Mechanical Engineer.
SPECIALTY:—Blast Furnace Construction.
P. O. Address
Franklin Iron Works,
Nov. 19:1y Oneida County, N. Y.

RICHARD H. BUEL,
Mechanical Engineer,
80 BROADWAY.
Plans and estimates prepared. Machinery and processes examined and tested.

E. GYBBON SPILSBURY,
Consulting Civil & Mining Engineer.
Mining Properties examined and reported on. Plans and estimates made for every kind of Mining machinery.
The concentration of ores a specialty.
187 Broadway, Street level,
New York.

THOMAS M. DROWN,
ANALYTICAL CHEMIST,
LAFAYETTE COLLEGE,
EASTON, PA.

D. ERNEST MELLISS, A. M., Ph. D.,
52 BROADWAY, NEW YORK,
MINING ENGINEER AND GEOLOGIST,
Analytical and Consulting Chemist
REFERENCES: W. Butler Duncan, Esq., (*Duncan, Sherman & Co.*); John J. Cisco, Esq., (*John J. Cisco & Son*); Walter Williams, Esq., (*Chairman Staffordshire Iron Masters' Association, England*); Charles F. Chandler, Ph. D., (*Dean of Faculty, School of Mines, New York*); Charles A. Joy, Ph. D., (*Professor Chemistry, Columbia College, New York*); J. A. Newberry, M. D., (*Professor Geology, School of Mines, New York*); C. P. Huntington, (*President C. & O. R. R.*)

SCHOOL OF MINES, COLUMBIA COLLEGE.
FACULTY.—F. A. P. BARNARD, S.T.D., LL.D., PRESIDENT, T. EGLESTON, JR., E.M., Mineralogy and Metallurgy; F. L. VINTON, E.M., Civil and Mining Engineer; C. F. CHANDLER, PH. D., Analytical and Applied Chemistry; JOHN TORREY, M.D., LL.D., Botany; C. A. JOY, PH. D., General Chemistry, W. G. PECK, LL.D., Mechanics; J. H. VAN AMRINGE A.M., Mathematics; O. N. ROOD, A.M., Physics; J. S. NEWBERRY, M.D. LL.D., Geology and Paleontology. Regular courses in Civil and Mining Engineering; Metallurgy; Geology and Natural History; Analytical and Applied Chemistry. Special students received for any of the branches taught. Particular attention paid to Assaying. For further information and catalogues, apply to
DR. C. F. CHANDLER,
Nov.21:1y Dean of the Faculty.

ENGINEER'S TRANSIT
FOR SALE.
A HELLER and BRIGHTLY Transit, with all the latest improvements, for sale cheap. Address "TRANSIT," office ENGINEERING AND MINING JOURNAL, New York.

Mass. Institute of Technology.
Fall Entrance Examinations, Sept. 23 and 24, at 9 A. M.
For Catalogue and June Entrance Examination Papers, address Prof. SAMUEL KNEELAND, Sec'y, Boston, Mass.

THE IRON-MASTERS'
LABORATORY.
Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.
No. 339 Walnut Street, Philadelphia.
J. BLODGET BRITTON.
This Laboratory was established in 1866, at the instance of a number of practical Ironmasters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of pure Iron in an ordinary Ore	$4 00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do.	12 50
For each additional constituent of usual occurrence	1 50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur and Phosphorus in Iron or Steel	12 50
For each additional constituent of usual occurrence	4 00
For the per cent. of Carbonate of Lime, and Insoluble Silicious Matter in a Limestone	10 00
For each additional constituent	2
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12

For determining the constituents of a Clay, Slag, Coke, or of an Ash of Coal, the charges will correspond with those for the constituents of an ore.
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.
Printed instructions for obtaining proper average samples for analysis furnished upon application.

IRON AND COAL PROPERTIES
Examined and Reported upon for Practical Purposes, by Experienced and Thoroughly Competent Mining Engineers and Experts.
Jan. 6-tf

E. B. BENJAMIN,
10 BARCLAY STREET,
NEW YORK CITY,
Importer and Manufacturer of all kinds of apparatus for mineral and chemical analysis. *Laboratory and Assaying Tools, Prospecting and Mining Implements, accurate* Balances and Weights, Furnaces, Tongs, Freiberg Scorifiers, French Cupels and Assay Cups. Flasks, Dippers, *Crucibles*, etc. Complete *Blowpipe* sets for gold and silver tests, Compasses, Becker's Ingot Moulds, Lenses, Evaporators, etc., etc.
For better description of apparatus and prices, see the large *Illustrated Catalogue*, beautifully gotten up, in cloth,
Price - $1 50 per Copy.
1y-apr8

ARTHUR VON BRIESEN
SOLICITOR OF AMERICAN AND FOREIGN PATENTS,
258 BROADWAY, (Cor. Warren St.,)
ATTORNEY & COUNSELLOR AT LAW IN PATENT CASES. NEW YORK.
All orders promptly attended to. Information gratis.

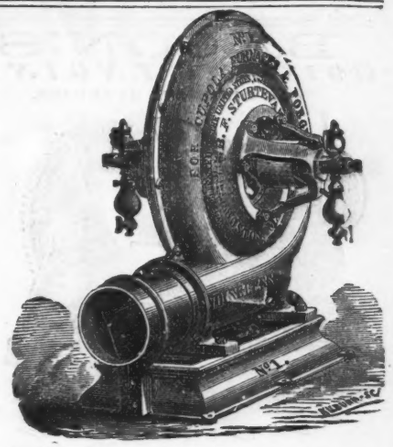
HELLER & BRIGHTLY, Engineering and Surveying Instruments, 33 N. Seventh St., Philadelphia.
Without decreasing size of any part of our "Engineers' Transit" we have reduced the weight one-half. An ordinary Transit Telescope magnifies from 10 to 12 diameters, our new Transit Telescope (length 10½ inches, shows objects erect and not inverted) magnifies 28 diameters and will read time on a watch-dial at 983 feet. For description of our new Mining Transit (weight 5½ lbs.) and Plummet Lamp see Van Nostrand's Engineering Magazine, June, 1873.

TRADE MARK.

REG. JUNE 27, 1871.

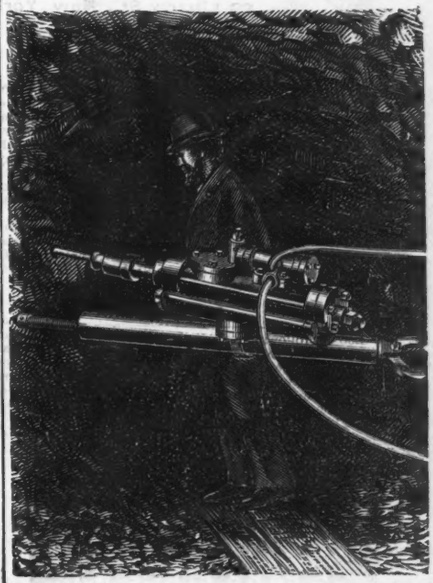
Extract from report of Committee of Civ. Engs. appointed by Franklin Inst. to examine H. & B's new Transit: (Dec. 1871.) "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviation which they have made from the common styles of Transit are decided improvements."
JOHN C. TRAUTWINE, Chairman.

WM. J. YOUNG & SONS,
43 North Seventh Street,
PHILADELPHIA.
Engineering Instrument Makers and Inventors and Introducers of Transit Instruments.
IMPROVED TRANSITS WITH TELESCOPES GUARANTEED SUPERIOR TO ALL OTHERS.
Improved Miners' Transits.
Photographs furnished on application.



B. F. STURTEVANT'S
PATENT IMPROVED
PRESSURE BLOWER,
FOR CUPOLA FURNACES AND FORGES.
Also manufacturer of the Sturtevant Patent Improved Fan Blower and Exhaust Fan. Send for illustrated catalogue.
B. F. STURTEVANT, 72 Sudbury street, Boston, Mass.
o29:1y

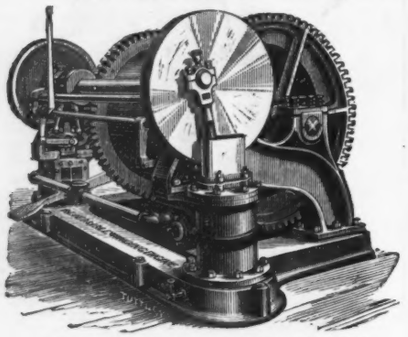
WOOD'S
STEAM OR PNEUMATIC ROCK DRILL.



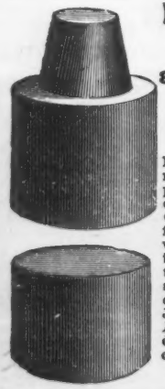
For all kinds of Rock, Mining & Quarrying
Weighs 95—180—380—635 lb.
For description see Engineering and Mining Journal of March 7, 1874. Address, DE VOLSON WOOD,
Hoboken, N. J.

COOPER'S GLUE AND REFINED GELATINE
COOPER, HEWITT & CO.,
NO. 17 BURLING SLIP, NEW YORK.
Bar Iron, Braziers' Rods, Wire Rods, Rivet and Machinery Iron, Iron and Steel,
Wire of all Kinds, Copperas,
&c., &c.
RAILROAD IRON, COOPER WROUGHT IRON BEAMS AND GIRDERS,
Martin Cast-Steel, Gun-Barrel and Component Iron,
PUDDLED AND REFINED CHARCOAL BLOOMS,
Ringwood Anthracite and Charcoal Pig Iron
Works at Trenton and Ringwood, N. J.
may 17 tly

BACON'S
HOISTING ENGINES
FOR MINES AND QUARRIES,



STEVEDORES, CONTRACTORS, ETC.
20 different styles, adapted to every possible duty.
Portable and Stationary
ENGINES.
BOILERS OF ALL KINDS,
Copeland's Wire Rope and Mining Machinery.
COPELAND & BACON,
feb. 7:3m M'f'rs, 85 Liberty st., New York.



MINING MACHINERY.
MOREY & SPERRY,
88 Liberty St., New York.

Steel Shoes & Dies,

Made by our improved process. After many years of patient research and experiment, we have succeeded in producing STEEL SHOES AND DIES FOR QUARTZ MILLS, which are unequaled for strength, durability, and economy; will wear three times longer than any iron shoes. We manufacture, and contract to erect Gold and Silver Reducing and Amalgamating Machinery in all its details. Pans, Separators, Concentrators, Jigs, Rock Breakers, and Furnaces. *Furnishers of Mining Supplies.* All Orders promptly filled. Examinations solicited.

MOREY & SPERRY.

☞ Look at following extract, Ingersoll Co.'s letter of excuses, ENGINEERING AND MINING JOURNAL, June 6, and compare with their advertisement: "I had *two* drills at the mine from the commencement, one beginning work on the 4th of April, the other on the 7th of the same month, and both drills working until the 1st of May." Signed, C. N. ELLIOTT, Superintendent Ingersoll Rock Drill Co.
RAND & WARING D. & C. CO.

MORRIS, TASKER & CO.,
PASCAL IRON WORKS
PHILADELPHIA,
TASKER IRON WORKS,
NEWCASTLE, DELAWARE.
Office..... FIFTH AND TASKER STREETS, PHILADELPHIA.
Office and Warehouse..... No. 15 GOLD STREET, NEW YORK.
Office and Warehouse..... No. 36 OLIVER STREET, BOSTON.
Manufacturers of Wrought Iron Welded Tubes, plain, galvanized and *rubber coated*, for gas, steam and water. Lap-Welded Charcoal Iron Boiler Tubes, Oil-Well Tubing and Casing, Gas and Steam Fittings, Brass Valves and Cocks, Gas and Steam Fitters' Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved CoalGas Apparatus, &c.
We would call Special Attention to our Patent Vulcanized Rubber-Coated Tube.
THOMAS T. TASKER, JR. STEPHEN P. M. TASKER.

RAND AND WARING
DRILL AND COMPRESSOR COMPANY.
21 Park Row, Opposite New Post Office,
NEW YORK.
Send for Circulars.

Actual Work done at trial at Port Henry Mine.

		Rand.	*Ingersoll.*	*Waring.*
First Week,	feet,	459½	288	.....
Second "	"	459	257	136
		918½	545	136

1841. 1874.
Mt. Savage Fire Brick
For Blast, Smelting, Puddling and Glass
FURNACES,
Have stood the test of more than **33 Years** as unequaled by any Domestic or Foreign Article for Refractory Power.
Manufactured only by the
UNION MINING COMPANY
Of Alleghany County, Maryland.
For Circulars, Diagrams, and Price Lists apply to
JAMES S. MACKIE, Pres't., 71 Broadway, New York, or
JAMES A. MILLHOLLAND, Vice-Pres't.,
CHAS. M. MACGOWAN, 96¼ Fourth Avenue, Pittsburgh, Pa.,
Sole Agent for Pittsburgh and the West.

Cazin's Combination Ore-Sizer and Concentrator One-Plunger System.
Covered by letters patent of July 2d, 1872, and recent application. Containing a sizing apparatus (revolving screen) delivering four sizes of ore to four rows of sieves, each row independent of the other, and each having 5 sieves, each row concentrating according to specific gravity, the special size of ores automatically fed into it, resulting in the simultaneous continual delivery of thoroughly separated materials, working 2d and 3d class ores into 1st class ores of perfect cleanness. It thoroughly separates native gold or copper from quartz or any other lode matter, galena and silver sulphurets from pyrites, baryta and quartz, and pyrites from quartz.
Added to a battery of stamps this machine constitutes a full system of ore-concentration sufficient, in most cases, for the requirement of Western mines with a capacity of 12 to 15 tons per 24 hours. For particulars apply to **F. CAZIN**, M. and C. E., at Denver, Colorado, Lock Box 2225, or 243 16th street.

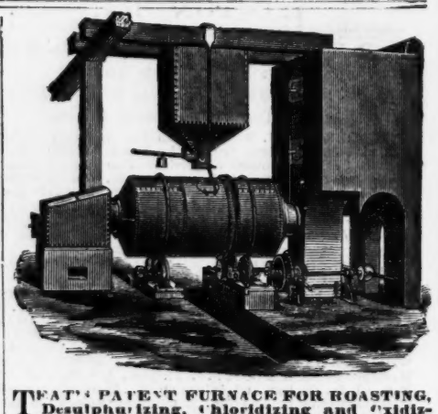
THE INGERSOLL
ROCK DRILL CO.
5 PARK PLACE, N.Y.
OFFER THEIR MACHINES ON TRIAL AND CLAIM 40 PR.CT. INCREASED POWER OVER ANY DRILL IN EXISTENCE.
SEND FOR CATALOGUE.

Compressor and Rock Drills at Port Henry Mines, New York.

First week with **ONE** Ingersoll drill.....288 feet.
Second week " " " " .....257 "
545 "
First week with **THREE** Rand drills.....459½ ft.
Second week " " " " .....459 "
918½ ft.

WARING'S IMPROVED SELF-FEEDING
ROCK DRILL

By far the most simple and effective machine for all descriptions of mining, railroad, and quarry work.
GEO. H. REYNOLDS, in his report of the trial of the Rand, Ingersoll and Waring Rock Drills, at the Port Henry Iron Ore Company's Mines, at Mineville, N. Y., April 20, 1874, states that one hole was drilled by the Waring Drill that could not be reached by either of the other machines, and undoubtedly the mounting of this drill for all purposes of varying work is far superior to either of the others. The experiment is conclusive and satisfactory. Also Dealers in
AIR COMPRESSORS, PUMPS, &c.
WARING ROCK DRILL CO.,
187 Broadway, New York,
Street Level, (Rear).



TEAT'S PATENT FURNACE FOR ROASTING, **Desulphurizing, Chloridizing and Oxidizing Ores, etc.**—For the reduction of Gold, Silver, Lead, and other ores, saving a larger percentage, at less cost, than any other invention now in use. Chloridizing Silver ore more thoroughly, in less time, with less fuel, salt and labor; also, roasting Lead ore preparatory to smelting, better and cheaper than any other invention. The Furnace is so constructed that one man, of ordinary ability, tends five or more furnaces; controls them with ease; adding heat and air; stopping or starting at will; charging and discharging with ease. Also, Patent "Conveying Cooler," for conveying and cooling roasted ores, heating the water for amalgamation and the boilers at the same time. Saving the large space in mill (covered with brick or iron), and the labor of two men per day, exposed to the poisonous chlorine gases. Also, Patent Air Blast "Dry Kiln," for drying ores direct from the mine or breaker, saving fuel and labor heretofore necessary in drying ores for dry pulverizing. For description refer to ENGINEERING AND MINING JOURNAL, No. 9, August 29, 1874. For particulars address TEATS & BREED, No. 12 West 8th street, Cincinnati, Ohio.
Circulars, &c., will be furnished, if required.

Z. B. HEYWOOD & CO., Dealers in Hose, Belting, Packing, and all other kinds of Rubber Goods.
303 CANAL STREET, NEW YORK.

THE ENGINEERING AND MINING JOURNAL.

VOL. XVIII.—No. 13. NEW YORK, SATURDAY, SEPTEMBER 26, 1874. PRICE 10 CENTS PER COPY.

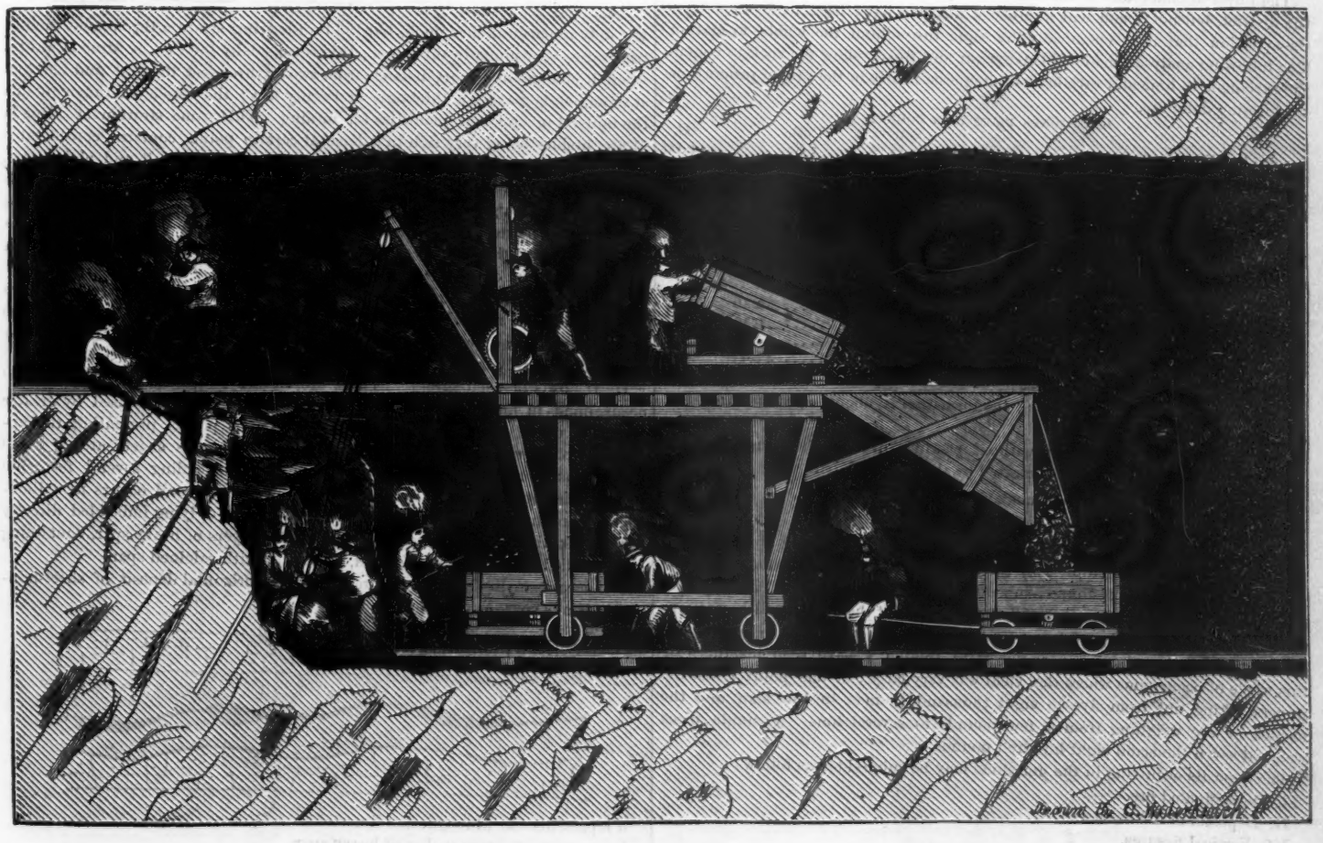
Tri-Nitro Glycerine at the Hoosac Tunnel.*

THIS very interesting and useful little book gives an immense amount of information on the subject of Nitro Glycerine and the various explosives, dynamite, quick powder, dualine, litho-fracteure, mica blasting powder, &c., which are merely mixtures of nitro-glycerine with some inert substance.

The enormous energy of nitro-glycerine makes it by far the most effective explosive we are acquainted with, (if we except liquefied protoxide of azote,) and a better acquaintance with its properties and with the necessary precautions to be observed in using it, which a careful perusal of this book affords, will tend to its more general introduction, which will be to the benefit of mining interests generally. The chemical composition of tri-nitro-glycerine is expressed by the following formula: $C^3 H^5 O^2 \left.\begin{matrix} NO^4 \\ 2\,NO^4 \end{matrix}\right\} O^4$. It requires the greatest possible care in its manufacture, or rather in its purification. Most of the terrible accidents with which we are accustomed to associate nitro-glycerine, were undoubtedly due to the imperfect purification of the compound which thus contained within itself the seeds of decomposition and spontaneous explosion.

Mr. MOWBRAY, whose experience in the manufacture and use of nitro-glycerine at the Hoosac Tunnel probably exceeds that of any other manufacturer in the world, has found that pure nitro-glycerine will congeal at 45° F., while the impure article solidifies at a temperature of 50° F. In its frozen state, contrary to what has generally been supposed, nitro-glycerine is perfectly safe and will explode only with the greatest difficulty. Mr. MOWBRAY, therefore, where possible, has it packed with ice for transportation. He has never had an accident in transportation.

One cause of accident in blasting, but little understood, and which applies to powder as well as nitro-glycerine, is thus stated: "The blaster, not aware that he is a walking charge of electricity, proceeds to his work, inserting cartridge after cartridge of nitro-glycerine, until he comes to the last, which is armed with the electric fuse. The moment his hand touches one of the naked wires, the current passes through the priming, and explosion follows. Let a blaster, before he handles these wires, invariably grasp some metal in moistened contact with the earth, or place both hands against the moist walls of the tunnel." * * * *



"Above all, do not ventilate, by allowing a free blast of air through a rubber connecting pipe, *until after the electric connections have been made and the blast fired.*"

Our own experience, which fully confirms the claims of nitro-glycerine to much greater strength than any other explosive, has yet given us a preference for the dry over the liquid explosive. Mr. MOWBRAY appears to have found the same objections to the use of the liquid, for he has also his patent "mica blasting powder," which is finely divided scales of mica saturated with nitro-glycerine.

The above cut shows very clearly the method of carrying on the work at the west end of the Hoosac Tunnel. The tunnel was driven in two benches, the heading being kept some 500 ft. in advance of the bench-work. "The average of the work may be said to have consumed two to three pounds tri-nitro-glycerine per cubic yard of rock in the headings, and from six to twelve ounces per cubic yard at the bench-work and stopes. This expenditure was bettered in 1874 by greater care and attention on the part of the blasters, and by the substitution of mica blasting powder." We will refer to this subject on another occasion.

* A Pamphlet by GEO. M. MOWBRAY. For sale by D. VAN NOSTRAND, New York.

On the Occurrence of the Lead Ores in Missouri.*

BY JAMES R. GAGE M. E.

THE lead-deposits of Missouri may be divided into three districts, the south-west, middle and south-east. As too much time would be required to devote a detailed account to each district, only a description of the modes of occurrence of the lead ores in the south-east district will be given.

The lead mining region proper of South-East Missouri is embraced in an area of about twenty-five miles in width by about one hundred in length.

The country embraced in this district is very broken, and traversed by ridges from one hundred to three hundred feet in height, with an occasional knob rising higher.

Porphyry forms almost the entire substructure of the region, with here and there out-crops of granite. The crystalline rocks were eroded into ridges and valleys before the deposition of the limestone took place.

These porphyries are older than the Silurian limestones, and "belong (according to PUMPELLY) to the Archæ (Azoic) formation, of which they may be the youngest member in Missouri. They are the near equivalents, in point of age, to the great iron-bearing rocks of Lake Superior, New Jersey and Sweden."

Farther west the porphyry knobs are much higher, and form an archipelago of islands in the Lower Silurian Limestone.

In the immediate lead region the porphyry ridges are much lower, and nearly the entire surface must have been covered by the Silurian seas when this limestone was deposited, known in Missouri as the 3d magnesian-limestone, being the equivalent of the Potsdam sandstone.

This 3d magnesian-limestone is the great storehouse of the metalliferous deposits of this region. No lead ores, or their usual associate minerals, have been found in workable quantities in any over or underlying stratum.

The physical characters of the limestone appear to be very uniform throughout the district, but not a sufficient number of analyses have been made to warrant the assertion that it is chemically the same throughout the whole formation. The following analyses, made by CHAUVENET and BLAIR, show the rock to contain the carbonate of lime and carbonate of magnesia nearly in the proper proportions for forming dolomite.

LIMESTONES FROM IRON COUNTY.

	A.	B.	C.
Insoluble silica	5.11	3.85	2.06
Peroxide of iron	4.67	1.07	none.
Carbonate of lime	47.50	52.50	54.32
Carbonate of magnesia	42.19	42.56	43.82

This limestone, especially B, is very similar to the "Galena-limestone" of Iowa and Wisconsin, as seen by the following analysis taken from WHITNEY'S report:

LIMESTONE FROM DUBUQUE.

Insoluble	2.46
Carbonate of iron	1.35
Carbonate of lime	52.00
Carbonate of magnesia	43.93

The limestone rises at the highest point to about the three hundred foot contour line along the porphyry ridges; the formation is about eight hundred feet in thickness.

Shafts have been sunk 180 feet without passing through the limestone; the underlying porphyry has been penetrated by the diamond drill.

MODES OF OCCURRENCE OF THE LEAD ORES.

A. As Float-mineral.

B. Deposits in the limestone.

Float mineral is a term applied by the miners to designate that mode of occurrence where the galena is found embedded in the superficial soil immediately overlying the limestone. Occasionally large masses of the galena will be concentrated in a small area only a few feet from the surface, but being so irregularly distributed that the mining is very uncertain, though I have seen instances of this mode of occurrence where the yield was very large; at one point I saw the miners taking out from five to eight thousand pounds to the man, and the masses of ore weighing from a few pounds to several tons. A single piece weighed seven thousand eight hundred pounds.

The deposits occurring in the limestone may be subdivided as follows:

I. Disseminated ore.

II. Deposits in flat-sheets.

III. Vertical fissures.

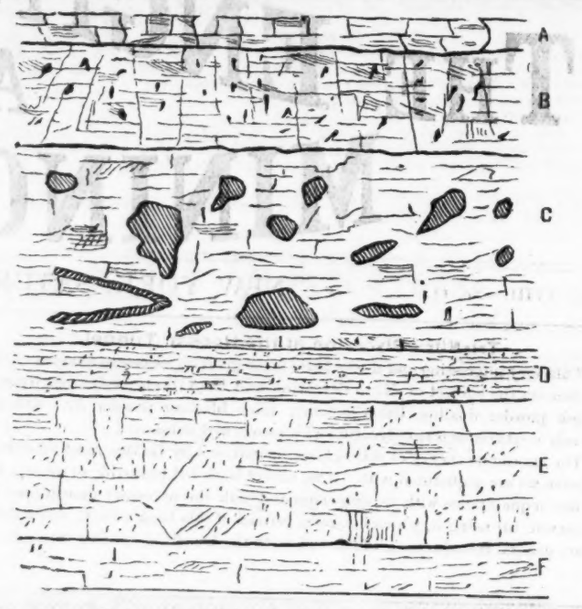
IV. Horizontal fissures.

I. The disseminated lead ore usually occurs in a stratum of limestone varying from two to six feet, occasionally reaching a thickness of fifteen or twenty feet; the beds of limestone are nearly horizontal, usually having a dip of eight to ten degrees. Rarely does the inclination become greater.

The galena in this formation seldom occurs alone, but is usually associated with iron and copper pyrites, and at some points the latter mineral occurs in considerable quantities, and in a few cases, as at Mine la Motte, nickel and cobalt ores are found.

The accompanying cross-section will give some idea of the appearance of the disseminated ore.

a represents the roof rock, being ten feet to the overlying soil; it is a dense, almost white crystalline limestone. *b* is a stratum of limestone ten inches thick, and very similar in character to the roof rock, but contains small blotches of galena distributed very irregularly throughout. *c* represents the true lead-bearing rock of this region; at the point where this section was sketched the stratum

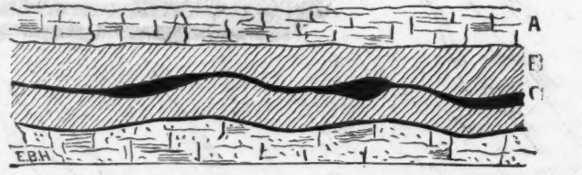


was only nineteen inches thick, but the lead-bearing stratum throughout the district varies very much in thickness; this is especially the case at Mine la Motte, where it changes in a short distance from two or three feet to eight and ten, and at some points reaches a thickness of twenty feet; the whole stratum contains the mineral in sufficient quantities for mining. This same stratum at Mine la Motte, besides being very rich in galena, at certain points contains considerable quantities of copper pyrites and a variable percentage of cobalt and nickel ores. *d* represents a four-inch clay slate, which increases and diminishes in thickness more or less throughout the mines. This slate is very interesting, as it contains the only organic remains (a Lingula) I have observed in the formation; it is also the depository of the only crystallized form of the nickel and cobalt ores, which occur in beautiful cubes of "cobalt glance."

This disseminated occurrence of the lead ore is probably the most valuable we have in Missouri, and although not yielding as largely in a given area as do the "clay diggins" and "cave-formations" of middle and South-West Missouri, the mining is probably the more remunerative as the yield is more constant.

II. Deposits in "flat-sheets." There are two ways in which the "flat-sheets" occur, one is in strata containing the disseminated ore, and is caused by greater quantities of the ore being concentrated at different points, presenting the appearance of "sheet-mineral;" but when this is the case the sheets are of small dimensions, usually a few inches in extent, rarely extending several feet; but more persistent in its extent is the ore when the sheet-mineral occurs in a limestone where there is no disseminated ore, and instead of lying imbedded directly in the rock, the sheets are enclosed in horizontal layers of heavy spar, containing cavities filled with crystals of galena, associated with calcined spar.

The accompanying cross-section represents a horizontal deposit of sheet-mineral in heavy spar, as seen near Potosi.



a represents the 3d magnesian-limestone.

b represents eighteen inches of heavy spar.

c represents a sheet of galena, varying from a half inch to three inches in thickness.

TO BE CONTINUED.

* A paper read before the American Institute of Mining Engineers at the St. Louis Meeting May, 1874.

Pennsylvania Railroad Coal Lands.

THE coal lands owned wholly or partly by the Pennsylvania Railroad embrace a total of 27,950 acres. The Lykens Valley land lies in a block extending nine miles, with an area of 9200 acres. No other company has access to these veins, containing on a low estimate 100,000,000 tons of coal, commanding 75 cents per ton more than any other anthracite. The Shamokin coal lands amount to 7808 acres. The coal mined there is of good quality and liked in Boston, but subject to little competition. The Hazleton property, owned by the Pennsylvania Railroad exclusively, covers 2100 to 2200 acres. Explorations show that almost the whole of this land is underlaid with coal, and borings indicate that the Mammoth Vein underlies a large portion of it. If this is the case the value will be increased

from a cost of say $137 an acre to a value of at least $1000 an acre. The Susquehanna coal property lies in a basin, on both sides of the Nanticoke Dam, containing 5823 acres, and no property in the State is better adapted for shipping coal, particularly on the completion of the bridge at Nanticoke to connect with the Lackawanna and Bloomsburg Railroad.

The money put into these lands is extremely well invested, but the policy of controlling mining and other interests apart from the railroad is regarded as of doubtful propriety. Purchases should be, in the opinion of the committee, made only so far as necessary to secure tonnage along the lines of railway. This ground has been taken by the present management, which will protect but not enlarge present investments.—*Report of the Penn. R.R. Co.*

A New Form of Wagon Drop for Blast Furnaces.

THE success attending the application of the hydraulic brake to the lowering of charges into blast furnaces, has led to apply the same principle to the lowering of wagons in the wagon drop. The hydraulic cylinder is made the same length of stroke as the fall of the cage, and is placed in a vertical position on the top of two pedestals of brickwork, or other framework. The cage is directly below, and is attached to the piston by means of a long piston rod working through a stuffing box at the bottom of the cylinder. At the top of the cylinder is a small supply tank, fitted with a self-acting ball cock, to keep the same always supplied from the nearest water main. A small adjustable hole in the cover communicates with the inside of the cylinder to ensure that it is always full of water, and another small hole in the piston allows any air, which may accumulate under the piston, to pass to the upper part of the cylinder, whence it escapes into the tank by the hole before mentioned. A pipe connects the top to the bottom of the cylinder through an ordinary water cock, which is controlled by a weigh bar and lever. A catch lever is placed alongside the valve lever, and serves to lock the cage as it comes to the top of its stroke. This holds the cage, while the wagon runs on until it is required to descend, the catch-rod then being liberated, and the valve handle lifted. By the opening of this valve, the water passes from the bottom to the top of the piston, thus controlling the descent of the cage with the greatest nicety to any speed the attendant may choose. When the cage touches the ground, a self-acting stop piece is removed automatically, which allows the wagon to run off. The cage being thus lighter than the counterweights, is drawn up again. The water in the cylinder during the ascent is returned from the top to the bottom of the piston, and when the cage arrives at the top of its stroke it locks itself, and is then ready for receiving another wagon. A small pipe encircling the lower part of the cylinder, is placed for the admission of steam in frosty weather, to prevent the chance of sloppage or breakage from freezing. This form of hydraulic brake is on the same principle as an apparatus invented by the author a few years ago, for lowering charges into blast furnaces. The cylinder is in this case a short stroke, and is attached to a beam, the opposite end of which supports the bell. In lowering the charge, a catch-rod is liberated, and by opening a cock the water is allowed to pass from the top to the bottom of the piston, exactly as in the wagon drop. The simplicity of this arrangement has led to its extensive adoption. Up to the present time Messrs. HEAD, WRIGHTSON, & Co., of Stockton-on-Tees, have applied it to the bells of 81 furnaces. At the suggestion of Mr. WILSON, of Middlesbrough, Mr. HOWSON has arranged one of these hydraulic drops with very simple and economical supports of brickwork. This renders the machine favorably comparable in point of cost with any other form of drop. One of these is already in successful operation at the works of the Lincolnshire Iron and Smelting Company, Fordingham.—*London Mining Journal.*

Waste of Coal in Mining.

IN coal mining in England both the chamber and pillar and the long-wall systems are in use; the evidence taken before the coal commission of 1871 showed that in the steam coal collieries of South Wales, fully forty per cent. of the coal is lost in the former, and about fifteen per cent. in the latter. In working in bituminous coal, where the small is used for coking, the waste is not nearly so great.

In some pits the coal is raked or screened before being sent out of the mine, This is called the "separation" principle; and where the collier is paid only for hand picked coal, as in some of the South Wales mines, not more than from five to ten per cent. of the coal sent to bank is small, while when the "altogether coal" principle is adopted, that is, where all the coal cut is sent to bank, as much as 45 and 50 per cent. passes through the screens at the pit's mouth. About Newcastle the first screenings are generally again separated according to size into "nuts," "peas,' or "beans," and "duff," or "waste." The relative proportions of these sizes at a colliery near Sunderland were found by Mr. DANVERS to be

Round coal	46 per cent.
Nuts	21 "
Beans	18 "
Duff	15 "

That is, the waste of what comes to bank is about 15 per cent. in addition to the coal left in the mine in pillars, etc.

In a colliery worked on the separation principle these proportions in the coal raised were

Round coal	80.3 per cent.
Nuts	12.5 "
Beans	3.8 "
Duff	3.4 "

A large amount of fine coal was left in the pits.

Wages at Blast Furnaces.

TO MEET inquiries which are frequently received at this office, we have prepared with care the following table of wages paid for furnace work in various iron-producing sections of the country. Our sources of information are reliable, and the figures given are correct. It will be observed that the highest wages are paid at Pittsburgh.

CLASSES OF WORKMEN.	COKE.		ANTHRACITE.			
				Schuylkill Valley, Pennsylvania.		
	Pittsburgh.*	Near Pittsburgh, in Pennsylvania.*	Along the Susquehanna, in Pennsylvania.*	90 miles from Philadelphia.*	76 miles from Philadelphia.*	Hudson Valley, New York.‡
Keepers	$2 75	$1 99.7	.....	$2 08	$2 00	$2 00
Helpers	2 20	1 56.9	.....	1 65	1 70	1 62½
Top fillers	2 00	1 56.9	1 40	1 60	1 80	1 62½
Cindermen	2 00	.....	.....	.....	1 70	1 62½
Ore fillers	1 90	1 56.9	1 40	1 57	1 70	1 72½
Ore helpers	1 90	1 56.9	.....	.....	.....	1 62½
Coke fillers	1 90	1 56.9	.....	.....	.....	.....
Coke helpers	1 90	1 56.9	.....	.....	.....	.....
Hot-blast men	2 00	.....	.....	.....	.....	1 62½
Laborers	1 58	1 25.5 1 14.1	1 00 1 15	1 25 1 30	1 43	1 50
Engineers	3 70	2 47.2	.....	2 03	2 50	2 34
Assistant Engineers	2 70	2 23.4	.....	.....	1 60	1 62½
Firemen	2 00 1 58	1 45.5	.....	.....	.....	.....
Shafters	.....	1 61.6	.....	.....	.....	.....
Carpenters	2 50 2 25	1 71.1	.....	.....	.....	.....
Stock carters	1 90	.....	.....	1 30 1 50	.....	1 50
Cinder carters	1 90	.....	.....	1 60	.....	1 62½
Iron Carriers	.....	.....	.....	1 54	.....	.....
Watermen (boiler tenders)	.....	.....	.....	1 75	.....	.....
Machinists	2 00	.....	.....	.....	3 00	.....
Iron men (weighers)	2 00	.....	.....	.....	2 50	1 75
Night foreman	.....	.....	.....	.....	.....	2 07½
Blacksmiths	2 80 2 12½	.....	.....	.....	.....	.....
Foreman	.....	.....	.....	.....	.....	†140 00

* Wages per day. † Wages per month.
‡ Wages per day, and 14 cents per ton for all make over 10 tons.—*American Manufacturer.*

Consumption of Coal by the Iron Industry.

THE *U. S. Railroad and Mining Register* has prepared the following valuable tables by taking the statistics of the production of iron and steel in this country in 1873, and the ratio of coal used to the ton of iron of different kinds, and to the ton of steel. The ratio is as follows:

	Tons coal.
One ton pig iron requires	2.25
One ton rolled iron, other than rails	2.40
One ton iron rails, including steel-headed rails	2.
One ton Bessemer rails	1.80
One ton cast steel	5.

These figures are considered slightly low, certainly fairly representing the average work of the whole country. They refer, of course, to the finished merchantable product in each case. Multiplying the production by the ratio we have:

		Tons.
Tons pig iron	2,290,658 × 2.25 =	5,153,980
Tons iron rails	721,775 × 2. =	1,443,550
Tons rolled iron	980,000 × 2.40 =	2,352,000
Tons Bessemer rails	128,266 × 1.80 =	230,878
Tons cast steel	40,000 × 5. =	2,000,000
		9,380,408

Taking these totals we find that the manufacture of iron in the United States required no less than 18½ per cent. of the coal mined in the country. This is merely for the production of the metal, not including the transportation of the 18½ per cent. of the entire coal, nor the power used in mining it. Our estimate includes iron, excepting rails, only as a raw material for a second series of industries. The pig iron goes into castings say to one-third the amount produced, and the plate and bar iron goes into a vast variety of products. The foundries, forges, mills, and mechanical and locomotive shops form a most extensive series of industries, perhaps rivalling the original in importance. But they all depend on the original production of iron, as given above, and this industry alone uses nearly one-fifth of the entire coal mined in the country.

Notes.

Non-Combustible Wood.—The English Admiralty have recently made some quite satisfactory experiments at Plymouth, upon a wood rendered uninflammable by treatment, which it is proposed to use in the construction of naval vessels. These experiments were superintended by Vice Admiral SIR WILLIAM HALL, the wood being non-combustible by treatment with a solution of sodium tungstate. The results prove that wood thus prepared is very much less inflammable than ordinary wood; chips and shavings made of it, though, of course, capable of being destroyed by fire, cannot be themselves inflamed, and cannot, of course, communicate fire to masses of wood thus prepared; so that frame-work made of this wood resists flame perfectly, at least when not exposed for a long time to a fierce fire. These advantages, however, are diminished by the considerable first cost of preparation, as well as by the increased weight of the wood after treatment. Before giving to the inventor of the process, Dr. JONES, the sum asked by him for the use of his process in the British navy, the Admiralty have ordered new experiments. Two small vessels are to be constructed, of exactly the same size and character, the one of the prepared wood, the other of ordinary wood. They are then to be similarly prepared and fired. In this way, it is believed that the real value of this method, if not in preventing, at least in retarding, fire on shipboard, may be satisfactorily tested.—*Journal Franklin Institute.*

THE ENGINEERING AND MINING JOURNAL.

NEW YORK, SATURDAY, SEPTEMBER 25, 1874.

ROSSITER W. RAYMOND, Ph. D., Editor.
RICHARD P. ROTHWELL, C. E., M. E.,
Editor of the Coal and Iron Department.

The Engineering and Mining Journal is devoted to Mining, Metallurgy and Engineering. Communications on these subjects will always be welcome.

It is the Official Organ of the American Institute of Mining Engineers, and it alone publishes the valuable papers read before that influential society.

Correspondence and general communications and books for review should be addressed to the Editors. Business communications should be addressed to the Secretary.

Remittances should always be made by Post-Office Orders or Bank Drafts, made payable to WM. VENTZ, Secretary.

Subscription $4 per annum; $2.25 for six months, in advance.

Advertising Rates. Inside pages 25 cents per line each insertion. Outside pages 40 cents per line. Special reduced rates will be given on application for advertisements extending over a long time or occupying a large space.

The legal rate of Postage on the ENGINEERING AND MINING JOURNAL addressed to its regular subscribers, is 20 cents per annum, or 5 cents per quarter, PAYABLE IN ADVANCE. Subscribers who receive their copies by letter-carriers will please hand the annual or quarterly postage to the carriers, taking their receipts. If any higher rates are demanded, report the facts to the local Postmaster. The postage on copies directed to subscribers in New York City has been prepaid by the publishers.

THE SCIENTIFIC PUBLISHING COMPANY.
WILLIAM VENTZ, Secretary,
P. O. BOX 4404. 27 Park Place, New York.

CONTENTS FOR THIS WEEK.

Tri-Nitro-Glycerine at the Hoosac Tunnel.	193	The Iron Trade and the Bulletin	196
On the Occurrence of the Lead Ores in Missouri	194	Jean Elie De Beaumont	195
Pennsylvania Railroad Coal Lands	194	Recent Progress in Economy of Fuel	197
A New Form of Wagon Drop for Blast Furnaces	195	COAL TRADE REVIEW	198
Wastes of Coal in Mining	195	Review of the British Coal and Iron Trade	200
Wages at Blast Furnaces	195	IRON MARKET REVIEW	201
Consumption of Coal by the Iron Industry	195	Metals	202
Notes	195	New York Stock Market	202
EDITORIALS:		Boston Stock Market	202
Quick Transit	196	San Francisco Stock Market	203
		American Institute of Mining Engineers	203
		Advertisements	203

WE have pleasure in announcing the arrival in this country of Mr. I. LOTHIAN BELL, the distinguished English metallurgist. He purposes spending some weeks here, in visiting our iron works and mines, and has expressed his intention of attending the next meeting of the American Institute of Mining Engineers, of which he is one of the four honorary members. In anticipation of this visit, the Council of the Institute has deferred announcing the time and place of meeting, in order to meet the convenience of our distinguished visitor. Mr. BELL has stated, however, that he will make his engagements to suit the convenience of the Institute. It is to be hoped our members—so many of whom are themselves iron manufacturers—will come in force to the meeting, to welcome one who has done more than any other living scientist to throw light upon the metallurgy of iron, and whose investigations are of scarcely less value to our than to his own country. It is also desirable that as many of our members as possible should prepare papers for the next meeting, that we may make the occasion both interesting and instructive to all concerned.

WE take pleasure in calling attention to the circular of the Colorado Bureau of Mines, published in another column. Enterprises of this kind have been frequently started, and have as frequently failed. The trouble usually is that they are forced to become speculative, or die; and in this dilemma they do just the former—and then the latter. It remains to be seen whether there is business enough in the legitimate transfer of mining property in Colorado to maintain a perfectly neutral and impartial intermediate agency between purchasers and vendors. Professor HERR, the Superintendent of the new Bureau, was a graduate of West Point, and late a professor of engineering at the Lehigh University in Pennsylvania. We trust he will be able to make the business profitable and honorable to himself and the Territory. Certainly it will be in his power, by the collection and preservation of valuable information, to render substantial service to the mining industry.

Quick Transit.

THE question of quick transit has probably received more fruitless attention than any other which has of late years agitated the good people of New York. Every scheme proposed has been advocated by its admirers, apparently on purely personal grounds, and consequently, outside of those directly interested in the profits of the enterprise, each project has found but few supporters, for it enlisted but little confidence. We hail with satisfaction the appointment by the Society of Civil Engineers of a committee of distinguished engineers to investigate the necessary conditions of success, and to recommend plans for—

First—The best means of rapid transit for passengers; and

Second—The best and cheapest methods of delivering, storing and distributing goods and freight, in and about the City of New York, with instructions to examine plans, and to receive suggestions such as parties interested in the matter may choose to offer, and to report on or before the first day of December, 1874.

Messrs. O. CHANUTE, M. N. FORNEY, ISAAC C. BUCKHOUT, CHARLES K. GRAHAM and FRANCIS COLLINGWOOD were appointed such Committee.

The recommendation of such a body as the Society of Civil Engineers—the highest authority in the land—will deservedly carry great weight, both with the public and the Legislature; and it would be well for the city if the decision on these important questions were left entirely with the Society. In any event, it is tolerably certain that no project that has been condemned, or that has not been recommended by the Society, can now be saddled on the city, and it will therefore be to the interest of each of the rival projects that its advantages be laid before this Committee. We trust the investigation will be the means of bringing out some practical plan, and confer on the suffering people of New York the quick transit so long and so ardently desired.

Information on the above subjects is asked for, and due credit will be given for all aid rendered to the Committee.

In referring to plans proposed to accomplish these objects, it is particularly desired to ascertain accurately—

First—The route and location proposed, and the reasons therefor.

Second—The character of structure proposed in various parts of the city.

Third—A close estimate of the cost in detail.

It is greatly preferred that all communications shall be in writing, addressed to G. LEVERICH, Secretary, 63 William Street, New York.

The Iron Trade and the Bulletin.

The *Bulletin* of the Iron and Steel Association contains, in its issue of the 17th inst., an editorial on "THE QUESTION OF WAGES," in which occurs the following statement:

"There are some intelligent persons professing to represent the iron men who suppose it possible that we can so far reduce the cost of producing iron in this country that the iron interest can do without a protective tariff and still flourish. The ENGINEERING AND MINING JOURNAL, the organ of the American Institute of Mining Engineers, is an advocate of this theory. It professes no love for protection, but expresses a warm attachment for the policy of reducing the cost of production. We have looked into this policy, and have come to the conclusion that it means but little else than a reduction of wages to the European standard. It may not be intended by its advocates to have precisely this effect, but that is exactly what it means. There is no other way of materially reducing the cost of production."

Our views on this question have been frequently and clearly expressed in our columns. We do not discuss the tariff question; much less do we advocate free trade; but we believe that the interests of the iron trade are better served by advocating economy, good management, and the intelligent application of the teachings of science to the manufacture of iron than in lobbying for increased tariffs, and thus keeping the industries of the country in a continual state of suspense and instability. The *Bulletin* must certainly admit with us that, under the stimulus of enormous, abnormal profits on iron, furnaces were erected where they never should have been; and that not a few works in this, and, for that matter, we suppose in every country are ignorantly, wastefully, and even dishonestly managed. It can scarcely be denied that, as we asserted, a great part of the periodical agitation for additional protection is made by, or in the interest of, these wasteful works. Such additional protection, as we have pointed out, is then nothing but a Government sinking fund for ignorance and incapacity.

The ground the ENGINEERING AND MINING JOURNAL has taken, and the movement it has initiated, is *for the more economical production of iron*. We desire to interest our iron makers in the progress which has taken place, and is constantly taking place in the metallurgy of iron, being fully convinced that the development of our iron trade to the proportions which our unrivalled resources of fuel, ores, the means of living, and the intelligence of our people not only warrant, but make inevitable, will force us to supply markets outside the limits of this country. The question is now very different from what it was a few years ago, when we could not supply our own markets. To-day we have a productive capacity beyond our normal consumption; and it will always continue so. Hence, if we cannot make iron so cheaply as to enable us to send our surplus out of the country, we must expect either a recurrence, at short intervals, of high and extremely low prices, with the periodical stoppage of works and failure of the weaker members of the trade, or else a combination of the men, or the masters, or both, to cause a curtailment of production, and regulation of prices in some such manner as is now being done by the Anthracite Combination. We do not believe this remedy for the prevention of violent fluctuations in the business and in wages can possibly be applied; and most men of intelligence believe with us that moderate wages, with steady work, are far more desirable than very high wages followed by periods of idleness, which reduce the average income of the workmen.

The diffusion of education, the growth of intelligence, and the constantly increasing facilities of intercommunication in civilized countries, are making the rate of wages more uniform, not by lowering them here so much as by raising them abroad. During the past few years we have seen thousands of our miners and ironworkers returning to England, because the more constant employment there, at wages almost as high as here, made it more profitable to them there than here, for the time being. The cry of "competition with the pauper labor of England" has no longer the force it had some years ago. We have always maintained the right of the workman to a fair recompense for his labor. The only difference

between us and the *Bulletin* on this point is that our solicitude for the laborer is constant, and does not ebb and flow with the Sessions of Congress.

The price of labor is like that of iron or any other commodity in the market; it cannot be kept up artificially (except by such a combination as we have in the anthracite trade) but must depend on supply and demand. Now, we have never heard any one advocate a protective tariff on the importation of laborers as a means of keeping down the supply and keeping up the price; and, hence, the demand for labor and its price must depend directly on the development we give to such industries as that of which we speak.

The chief difference between our views and those of the *Bulletin* is that it believes "there is no other way of materially reducing the cost of production of iron except by a reduction of wages to the European standard," while we believe that less could be done towards reducing cost by the reduction of wages than by the application of a more thorough knowledge of the metallurgy of iron, of more intelligence, and, in some cases, honesty, in the establishment and management of our works. Why should one furnace use two tons of anthracite to the ton of pig iron, while another working similar ores requires but 1¼ to 1½ tons to produce a ton of iron of equal quality? Why should one furnace produce per cubic yard capacity, per day, fifty per cent. more iron than its neighbor from the same stock? What now enables us to make steel (Bessemer) rails at a small fraction of what steel would have cost when wages were still lower, before the introduction of this improvement in manufacture? Why is BLAIR of Pittsburgh making iron at a much less cost than it has heretofore been made?

As Mr. ABRAM HEWITT remarked in his able address on "Iron and Civilization" before the Institute of Mining Engineers, it is the mission of science to reconcile cheapness of production with the maintenance of fair wages to the laborer. This we firmly believe; to this beneficient work we devote ourselves. While the *Bulletin* seeks temporary and violent remedies for the periodical fainting fits of the trade, we labor for a permanent condition of health, which shall make such periods impossible. In short, protection is the hobby of the *Bulletin*, and progress is ours.

Jean Elie De Beaumont.

A PARIS telegram says that M. ELIE DE BEAUMONT, the noted French geologist, is dead. This eminent scientist was born in France in 1792, and received his education at the great mining and technical schools of Paris. In 1832, he became one of the professors at the College of France, and consequently attained in the engineering service the rank of Inspector-General of the first-class. He succeeded CLAUDE LELIEVRE as member of the Academy of Sciences, and became permanent secretary thereof at the death of FRANÇOIS ARAGO in 1825. NAPOLEON III. made him a Senator and Commander of the Legion of Honor. The late scientist was nearly all his lifetime engaged in the geological survey of France, which was begun and carried out at the national expense. Associated with M. DUFRENOY the began this great project in 1825, and after careful researches and explorations, he succeeded in making a map of France, on which the geological character of the country was clearly defined. While thus engaged, M. ELIE DE BAUMONT was an idustrious investigator of the causes which have led to the changes on the earth's surface, and gave special attention to the laws governing the formation of mountains. He finally taught that mountain chains are to be classed according to the direction of their range, all those lying parallel with the same great circle of the earth, wherever they may be found, having been uplifted suddenly during the same geological epoch. He described in the last edition of his work on this subject the features of no less than 95 systems of mountains, and the facts he collected added largely to the geological knowledge of the day. M. ELIE DE BEAUMONT's scientific works were numerous, and prove him to have been a man of great attainments and diversified information.

Recent Progress in Economy of Fuel.

BY CAPTAIN C. E. DUTTON, U. S. Ordnance Corps.

[Abstract of a communication to the Washington Philosophical Society.]

CONCLUDED FROM PAGE 181.

THE use of liquid fuels has made but little progress, and for the best of reasons. It can seldom be an economical process, however perfect the combustion, or however high the temperature. Owing to the very large percentage of hydrogen contained in them, the calorific power is exceedingly great, and when burned under advantageous circumstances the possible temperature is immense. It is conceivable that exigencies may arise where this great temperature would more than compensate the first cost of the fuel; but such cases must be rare, and if liquid fuel ever finds a field of usefulness, it will be an exceedingly narrow one. To obtain this high calorific equivalent, it is necessary to produce the most thorough intermixture or diffusion of oxygen with the hydrocarbon gases; otherwise much of the carbon will escape combustion, and it has, in all cases, been found necessary to volatilize the liquid before admission to the furnace, and even there special precautions must be taken to secure a rapid intermixture with air at the moment of admission. This is best accomplished by means of two sets of gas jets—one delivering the fuel, the other air, the two currents interlacing and being injected with considerable velocity.

A curious subject is the use of jets of steam for facilitating combustion. This is not unfrequently practiced, and there is a most remarkable diversity in the professed objects for which it is done. Thus there reappears, periodically, a grand invention for decomposing water and recombining its elements, with an enormous development of heat, from "a fuel costing nothing." A steam jet is often used as a substitute for a blowing-fan, though ordinarily nothing more is claimed for it than the motive power of the blast; and its application to boiler-fires, and even to the cupola furnace, has been attended with a certain measure of success. The inference first presenting itself is, that the steam is merely a foreign body in the volume of combustion, and by its great specific heat reduces seriously the temperature of the flame. But this would be a hasty conclusion, and overlooks some important facts. These jets of steam are usually discharged from small nozzles under a very considerable pressure, and produce an intense agitation of the air. We might recall here the celebrated analyses of Sir W. R. HAMILTON and of HELMHOLTZ, of the vortical motion of fluids and their demonstrations of the remarkable persistene of vortices in a fluid so nearly perfect as air. An air-blast in a state of intense agitation from the discharge of a steam jet is obviously much better adapted for rapid diffusion and intermixture with combustible gases than the comparatively quiet streams of air drawn through by the draught. Hence we may be prepared to find that, generally, the use of the steam jet is not attended with the reduction of temperature which might at first have been anticipated; but, on the contrary, its cooling effect is doubtless, in many cases, more than offset by the more complete combustion of the fuel, with a supply of air rather less than that ordinarily used in the grate. This view is apparently confirmed by practical results. We may perceive here the reason why the "water-gas" process, which is supposed by its inventors to decompose water, and recombine its elements, really gives a very intense heat whenever the steam jet is turned on. The liquid fuel has a very high calorific power, and the complete combustion of the hydrocarbon gases more than compensates the cooling influence of the steam. The process, however, is far from economical.

An interesting plan was suggested, some years ago, by M. CH. SCHINTZ, for the partial elimination of nitrogen from the combustion. As this gas constitutes four-fifths of the volume of air, it is quite obvious that an elimination of one-half of it would augment very greatly the temperature of combustion. The process proposed by M. SCHINTZ is not a practical one, for reasons which will immediately suggest themselves; but it contains a suggestion of great value, which may sometime prove invaluable. In this furnace, common limestone is calcined by the waste heat in a suitable retort, or chamber. The carbonic acid which is thus expelled passes through a second chamber, containing coal, which is also heated by waste heat. The CO^2 taking up another atom of carbon, becomes CO. Thus an inflammable gas is obtained unmixed with nitrogen, and to convert it into CO^2 again, only one-half the usual quantity of oxygen is required. The temperature due to this process (assuming it to operate perfectly) would be theoretically greater than that of the Siemens, where the nitrogen from the generator enters with the gas, and where the heavier hydrocarbons are condensed, and do not reach the hearth.*

This project of M. SCHINTZ is mentioned, not because any practical value is attached to it in its present shape, but because it involves a sound principle. For many of the processes of iron and steel metallurgy, a high temperature means efficiency and economy, and the elimination of nitrogen, to a sensible extent, must (other things being equal) be attended with a marked increase of temperature.

Of all modern inventions in this field, the most important and successful is the regenerative principle which was first realized by Mr. SIEMENS. The conception was a most brilliant one, and worthy of one of the greatest inventors of the age. It has placed in the hands of the metallurgist an instrument as important as the steam-hammer, and has created new and immense possibilities. We cannot sufficiently applaud the ingenuity and skill which has succeeded in arresting the subtle agent, heat, after it has passed through the furnace and failed to do its whole duty, entrapping it on its outward course into space, and bringing it back to perform its function. The operation of the Siemens furnace is too well-known to need description. There are some points, though, to which allusion might be made. It seems like mere captious criticism to find defects in such a valuable device as this, and to talk about waste of fuel in a furnace which is, in reality, very economical, when compared with those which it has replaced. Yet it is absolutely certain that there is a great waste of heat which ought to be saved, and that, as this furnace is now constructed, the advantages of the regenerative principle are not obtained without unusual sacrifice in other parts of the process. A large portion of the heat generated in the producer is thrown away in the long flue leading to the furnace, in order to extract from the fuel its condensible hydrocarbons (its most valuable constituents for calorific purposes), and to give the gases propulsion. The gases are also mixed with a gratuitous addition of water, and, quite probably, with a notable percentage of carbonic acid. Upon entering the furnace, the gaseous fuel is, therefore, diluted with nitrogen, water and carbonic acid, and robbed of its hydrogen, and the low temperature due to this mixture must be compensated wholly by the regenerators. While the high temperature actually obtained demonstrates the efficiency of Mr. SIEMENS's device, we may be sure that far greater economy of fuel might be obtained if it were practicable to generate the gaseous fuel in a more concentrated form. The present producer is a crude device, and very wasteful—a remark which may bring forth a challenge to devise a better one. But this is not the critic's business. His mission ends when he has pointed out merits and defects,

* The temperature added by the regenerator of the Siemens furnace does not average more than about 300° C. during a whole "shift," and is in current practice probably not above 250° C. In M. SCHINTZ's process, the gas would enter the furnace with an initial temperature of about 495° C.

and the remedy for the latter lies wholly within the field of the inventor. This criticism is not intended, however, to impair the high estimate which is placed upon the Siemens furnace by all who have had an opportunity to become familiar with its operation. Such an attempt would not only be folly in view of the practical success which has attended its use, but would be a gross misrepresentation. It is merely intended to indicate in what direction we may hope to find a still greater economy, by means of a device which has already proved itself to be one of the most economical which the present century has witnessed.

The most satisfactory feature and greatest progress of the last fifteen years has been, and still is, the attainment of higher temperatures than could be produced by the older methods. The manufacture of steel calls for the highest temperature which can be obtained consistently with the power of the furnace itself to withstand fusion. This increase of temperature is itself economy, for it is obvious at once that the expenditure of fuel is, other things being equal, directly proportional to the time required to effect a given operation. Now the rapidity with which thermal effects are communicated, increases very rapidly with the temperature, and though a little more fuel per hour may be required to obtain it, the shortening of the duration of the process much more than compensates it.

The greatest obstacle which confronts the inventor in his efforts to economize fuel is at present the cheapness of the article. There are numberless devices which certainly obtain increased calorific effects from the fuel expended, but with greater first cost of furnaces, greater labor in attendance, and greater cost for repairs, which more than offset the saving. In short, it usually costs more to save fuel than the fuel is worth. After all, the great question in the mind of the consumer is not how to burn coal economically, but how to burn it profitably, and he looks upon the idea of husbanding its supply for future generations as a piece of sentimentality quite parallel to the tears of Mark Twain at the tomb of Adam. It is useless to quarrel with this spirit, however much we may regret it, for no man will use an economical device which is not also profitable. * * * *

In reply to the inquiry whether the process of Messrs. WHELPLEY & STORER might not utilize the accumulations of slack at the anthracite mines, the speaker remarked that here was a case where economy would not involve corresponding profit. Unquestionably this refuse could be burned with great efficiency in the form of dust, but the highest economy of that furnace, and its greatest profit, would be reached by burning the very best Cumberland coal. The calorific power of the slack was seriously impaired by the loss of the last remnants of hydrogen, by the absorption of water, and by a relatively large increase in the amount of ash, while by no other process could the very high calorific equivalent of the bituminous coals be so perfectly developed. The cost of anthracite slack, delivered even at moderate distances from the mines, could not be very much less than that of good coal—the reasons will readily suggest themselves. The question, therefore, is, whether it is better to burn a good fuel or a poor one, with a small difference in the cost of the two.

COAL TRADE REVIEW.

Import Duty on Coal.

Anthracite free. *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

This is the only report published that gives full and accurate returns of the production of our Anthracite mines.

NEW YORK, Sept. 25, 1874.

The Production of Anthracite Coal for the week ending Sept. 19, 1874, was as follows:

Tons of 2240 lb.

	WEEK. Tons.	YEAR* Tons.
Wyoming Region.		
Delaware and Hudson Canal Co	56,179	1,677,466
Delaware, Lackawanna and Western R.R	53,872	1,756,152
Pennsylvania Coal Co	30,366	943,658
Lehigh Valley R.R.	16,151	690,367
Pennsylvania and New York R.R	1,561	43,947
Central Railroad of New Jersey	34,142	980,626
Sold at the mines by L. & W. C. Co.	....	13,901
	192,271	6,106,117
Lehigh Region.		
Lehigh Valley R.R	70,388	2,273,256
Central Railroad of New Jersey	30,987	785,287
Danville, Hazleton & W. B. R.R.,	1,569	27,755
	102,944	3,086,298
Schuylkill Region.		
Philadelphia and Reading R.R	92,444	3,394,673
Shamokin and Lykens Valley	27,482	643,737
	119,926	4,038,410
Sullivan Region.		
Sullivan and Erie R.R	243	26,795
Total of all the regions	415,384	13,257,620

* Year beginning Jan. 1.

The following table does not give the entire production of our bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Sept. 19, was as follows:

Tons of 2000 lb.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Cumberland and Pennsylvania R.R.	52,899	1,644,772
Cumberland Branch R.R.	6,165	241,294
Barclay Region, Pa.		
Barclay R.R. gross tons	5,954	244,779
Broad Top Region, Pa.		
Huntingdon & Broad Top R.R.	4,971	168,345
Clearfield, Region, Pa.		
Snow Shoe	828	43,197
Tyrone and Clearfield	12,951	433,814
Allegheny Region, Pa., " " " " "		
Pennsylvania R.R.	3,190	150,927
Pittsburgh Region, Pa., " " " " "		
West Penn. R.R.	5,151	138,802
Southwest Penn. R.R.	181	5,163
Penn. and Westmoreland gas coal, Pa. R.R.	13,899	647,032
Pennsylvania R.R.	10,223	319,415
Kanawha Region, W. Va.		
Chesapeake and Ohio R.R	....	....
Shipments from *Block House Region, Nova Scotia*, to Sept. 12.		
Consigned to the Provinces, tons 2240 lb.	639	10,546
" " " United States " " "	495	13,291
Shipments from *Pictou Region, Nova Scotia*, to Sept. 12.		
Consigned to the United States tons 2240 lb.	150	39,347
" " " West Indies " " "	355	5,367
" " Canada " " "	4,858	77,808
" " Other provinces " " "	2,524	45,806

The Production of Coke for the week ending Sept. 12.

Tons of 2000 lb.

	Tons.	Year. Tons.
Tyrone and Clearfield	71	551
West Penn. R.R., " " " "	254	9,342
Southwest Penn. R.R " " " "	8,735	283,044
Gas Coal, Penn. R.R. " " "	780	26,480
Pittsburgh Coal, Penn. R.R. " " "	528	45,893

The production of Anthracite for the week ending Sept. 19th was as follows: Wyoming Region 192,271 tons, being 6,236 tons more than the preceding week. In the Lehigh region, 102,944 tons, or 2,473 tons less than the week before, and in the Schuylkill region, 119,926 tons, being 55,601 tons less than the preceding week.

The total production of Anthracite from all the regions was for the week 415,384 tons, as against 467,561 tons the preceding week, and 500,365 tons for the corresponding week last year. From January 1st to Sept. 19th, there were produced 13,257,620 tons, as against 14,258,020 tons for the same period last year. The figures of last year's production are taken from the Pottsville *Miners' Journal*.

The receipts at Port Richmond were 33,000 tons; shipments, 44,000 tons; and balance on hand 59,000.

The receipts at Greenwich, Philadelphia, were: bituminous 2891 tons, and gas coals 1556 tons; shipments: bituminous 3156 tons, and gas coals 2507 tons; balance on hand: bituminous 2356 tons, and gas coals 4453 tons.

The production of Cumberland coal from January 1st to Sept. 19th, inclusive, was 1,886,066 net tons of 2000 lb. The production for the week was 59,064 tons.

The receipts of coal at Buffalo for the week were 6037 tons. The shipments by Lake for the same period were 10,500 tons.

The recipts of coal at Chicago for the week ending Sept. 12th, were 21,600 tons, and shipments 4089 tons.

There is no law, except the old-fashioned one of honesty and courtesy, obliging *Saward's Journal* to give credit for the tables of coal production which it copies from the ENGINEERING AND MINING JOURNAL. Consequently it copies without credit. If this kind of advertising adds to its reputation it is quite welcome to it.

Sales of coal do not appear to increase, as the season advances, as in previous years. It is now generally conceded that comparatively few consumers will lay in full winter supplies, but will buy for current wants till the expected reduction in prices comes on the 1st. Dec. It is stated in some quarters that the Combination will forego the programme advance of 15 cents in November, and the Pennsylvania Coal Company, and many of the principal dealers propose making a reduction in December. Our Philadelphia correspondent notes that the Reading Coal and Iron Company is now offering chestnut coal for $4, which is 15 cents below programme prices; there is probably some condition that is intended as an off-set to this. The Lehigh Valley Railroad having completed its quota under the programme for the month, all the mines on that line have been closed till the 1st October. The Reading and some of the other companies have not yet completed their quota and continue working. The reduction of 25 per cent in the output this month has not been found sufficient except in the case of a few kinds of coal. Stocks continue excessive, and the demand light for the season. It is probable a still greater reduction will be ordered for November, in order to reduce the stocks in hands of contractors and give tone to the market in Dec., when it is feared a general scramble will take place in the trade. The Scranton Company advertises in another column 60,000 tons for sale against 25,000 tons last month.

In the bituminous trade there is no greater activity than in the anthracite. Our correspondents from every part of the country report stocks large and demand very light. Our Montreal correspondent draws a very gloomy picture of the condition of the coal trade at that point. The greatly reduced business being done has made freights abundant and exceedingly low. Messrs. BIRD, PERKINS and JOB report freights from Cow Bay and Pictou to New York at $2 00; from the same ports to the West India ports $4 00, gold, and it is even expected that $3 will place cargoes for Cuba; Pictou to Guadeloupe $4 50 gold; to Cardenas $4, gold; Glace Bay, C.B., to Bardoes $4 25, gold; Richmond, Va., to Cardenas $4@$5. Yet, even with these low rates of freight, but little business is being done. From Havana and St. Thomas we hear the coal market is dull and supplies from England abundant. Some of the dealers in Havana say that little can be done with our American coals there till the freights from England exceed 20/, and that freights from our American ports can be brought down to $2 or thereabouts.

We note the arrival at New York, during the week, of 500 tons English cannel, imported for a dealer, said to be held at $17. There are also 200 tons of English house cannel on the market. Two cargoes of Newcastle gas coal have arrived on order for the gas works at, we understand, $6 50@$7 per ton. We note also a consignment of Red Bank cannel to go East at $8 50. The Commissioners of the Chesapeake and Ohio Canal have made a report on the causes of the boatmen's strike, which fully confirms the statement made by us last week as to the manner in which the Cumberland business of some of our companies is managed. There is a good field here for reform, and possibly the short dividends which the condition of the market alone would only partly account for may induce some of the stockholders to require more light on the management of their companies. The Commissioners say:

"A very large proportion of all the boats now navigating the canal have been built by capitalists at a cost of say $1,400 each, and the usual custom is for the builder to make an arrangement with the local agent of some one of the coal companies to take the boat into the company's line (in other words, to use it to transport that company's coal exclusively), whereupon the boat builder sells it to some boatman (who is generally poor and unable to pay for it in cash) at an advance of from $800 to $1,200 on the value of the boat, which amount is to be paid in regular installments, to be deducted at the end of each trip out of the amount paid for freight.

"It is useless for the boatman to resist. If he does not accept the terms it is impossible for him to obtain employment; hence he commences his work, paying not only a fair value for his boat, but a bonus that is extortionate. Add to this the cost of his team and outfit, purchased at a price greatly above its value, and it will be seen at once that the boatman must receive high freight from the coal companies, otherwise he cannot pay his trippage of from $35 to $40, and live.

"It is useless to say that he ought not to submit to this extortion.

"*It is impossible for him to obtain employment unless he does,*" . . . .

"As is well known to the Board, all the available wharf facilities at Cumberland and Georgetown one year ago were in the hands of private parties, and their charges were nearly equal to the tolls charged for operating and maintaining 184 miles of canal, costing eleven millions of dollars, and notwithstanding our improvements have compelled a reduction of 10 cents at Georgetown, the wharfage now paid is, at Cumberland, 8 cents per ton, at Georgetown, 25 cents per ton; total, 33 cents per ton.

"As the owners of some of these wharves are prompt in demanding of us a reduction of tolls, it is well to compare their charges and revenue with that received by the canal company, taking as an example the principal wharf at Cumberland, which is said to have cost sixty thousand dollars.

"In 1873 the number of boats loaded from it was 3,735. The average tonnage of each boat is 112 tons, or a total of 418,320 tons, at 8 cents per ton, making the gross receipts $33,465 60. The expenses of operating and maintaining the wharf cannot well exceed $12,000, which would make the profits about $21,465 60."

Cargo Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn, at Greenwich, Phila.	$6 25	$7 65
" " at S. Amboy ..	7 00	....
Red Bank Cannel Pa., at Phil.	8 50	9 50
" " at S. Amboy	9 00	....
" Orrel, "	7 00	7 65
" " at Phil.	6 25	....
Youghiogheny, Waverly Co, at Baltimore	6 00	7 65
Despard, West Va., "	5 50	7 40
Murphy Run, W. Va. at Baltimore	5 50	7 40
Fairmount, W. Va "	5 50	7 40
Newburgh Orrel, Md. "	5 50	40

Cannelton Cannel, W. Va., at Richmond.	11 00	12 50
" Spliut, " " ..	5 50	7 50
Peytona Cannel, " " ..	....	12 50
Sterling " Ohio..... ..	....	14 00
Straitsville, " Lyonsdale Cannel.....	....	11 50
At Sandusky, O.....	3 90	....

FOREIGN GAS COALS.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne .....12/@13/6		7 00@ 8 00
Liverpool House Orrel, at Liverp. ol ...	29/	13 00
Ince Hall Cannel "	52/	18 00
" Gas Cannel "	40/	15 00
Scotch Gas Cannel, at Glasgow, nominal.	28/	9 50
	Gold.	
Block House, at Cow Bay, N.S.....	2 25	6 50
Caledonia, at Port Caledonia	1 87½	5 70
Glace Bay, at Glace Bay	2 00	5 50
Lingan, at Lingan Bay	2 25	6 50
Sydney, International and Reserve mines, at Sydney	2 25	5 75
Pictou, Albion and Vale mines, at Pictou	2 50	6 50

STEAM AND HOUSE COALS

Broad Top, at the mine, $1 25; at Port Richmond, Phil .....4 75@5 00		6 00@6 25
Cumberland, at Georgetown and Alexandria, Va.....4 30@4 40		6 50@6 75
Clearfield, " Derby," " Kitanning" and "Sterling," at the mines, $1 25; at Greenwich, Phil .....4 75@5 00		6 25
James River, carbonite, at Richmond, Va	6 75	9 00
" bituminous, "	4 00	6 25

Retail Prices in New York.

Per ton of 2000 lo.

Liverpool House Orrel, ...$20 00@22 00	
Liverpool House Cannel, ...@25 00	
American Block, ... 16 00@	
Straitsville Cannel ..... 16 00@	
Carbonite..... 12 00@	

**Wholesale Prices for Sept. of Anthracite f.o.b., at the Tide Water Shipping Ports per ton of 2240 lb.*

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
†Lackawanna and Scranton at Elizabethport & Hoboken.....	5 25	5 35	5 45	5 60	6 10	5 05
‡Pittston at Newburgh	5 10	5 10	5 20	5 35	5 85	4 85
Wilkesbarre at Port Johnston..	5 25	5 35	5 45	5 60	6 10	5 05
Plymouth, R. A.....	....	....	5 45	5 60	6 20	5 05
Susque. Coal Co. at Amboy W.A.	5 25	5 35	5 45	5 60	6 20	5 05
Kingston at Hoboken	5 25	5 35	5 45	5 60	6 10	5 05
Lehigh Coals.						
Old Company at Port Johnston	6 20	....	6 15	6 15	6 30	5 35
Old Company's Room Run "	5 70	....	5 70	5 70	6 05	5 05
Sugar Loaf at "	6 20	....	6 15	6 15	6 15	5 20
Lehigh Coal Exchange "	6 05	....	6 00	6 00	6 15	5 20
Honey Brook at Elizabethport..	6 05	....	6 00	6 00	6 15	5 20
Spring Mt. C. Co. at Hoboken..	6 05	....	6 00	6 00	6 15	5 20
Beaver Meadow at South Amboy	6 05	....	6 00	6 00	6 15	5 20
Schuylkill Coals at Port Richmond.						
Schuylkill white ash.....	4 75	4 85	4 95	5 10	5 60	4 15
Schuylkill red ash	...	....	5 10	5 20	5 65	4 40
Shamokin white and red ash ..	....	....	....	5 10	5 65	4 45
N. Franklin	....	....	5 55	5 55	5 60	4 30
Lorberry.....	....	....	5 90	5 90	5 90	4 50
Lykens Valley.....	....	....	....	6 55	6 55	5 10

* Rates for the month of October have been fixed at 15c. per ton above these prices.

† f. o. b. in New York Harbor.

‡ These are the rates for Pittston coal. Buyers having registered contracts will be charged 15 cents less than above prices.

	Per ton.
Freight from Hoboken and Weehawken to New York.....	40c.
" " Elizabethport & Port Johnston to New York.	40c.
" " South Amboy to New York.....	45c.
" " Newburgh to New York.....	65c.
" " Port Richmond, "Phila." to N. Y. alongside	95c.
" " Rondout to New York by boat or barges of the D. & H. Canal Co. "delivered".....	50c.

Retail Prices.

per 2000 lb. are as follows:

	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 00	$6 20	$5 40
Delaware & Hudson, delivered....	7 35	7 60	6 85
Scranton, in yard..	7 25	7 50	6 80
Wilkes-Barre, delivered..	7 10	7 35	6 60
Lehigh & Locust Mountain, ...	7 50	8 00	7 00
Schuylkill Red Ash.....	8 25		

Coal Trade of Philadelphia.

PHILADELPHIA, Sept. 23, 1874.

The hopes of a revival of the coal trade, this season, have been generally abandoned. The simple fact that the Reading RR. Co. is compelled to put their employés on half time—and when they do work they are reduced to eight hours a day—tells the whole story of the condition of the Schuylkill County coal trade. With the exception of the retail trade to domestic consumers, which has been fairly active, there is literally nothing doing, no fresh orders or new contracts from the East. The shipments that are making are to fill contracts made early in the Spring. All the yards at the East, and at the tide water points of shipment, are overflowing with stored coal, while the avenues of transportation from the mines are clogged with restrictions, pretended scarcity of cars, and other obstructions, which prevent the independent dealers, not operating inside of the "pool," from promptly filling their contracts. Yet in the face of this condition of things, the circulars for an advance in the price of coal, for October, have been issued by the associated companies. On the whole, the combination has not worked as smoothly as was expected, and it is extremely doubtful if it will be renewed for another year, neither has the "pooling" arrangement of the Reading Coal and Iron Company been a great success; perhaps it is the fault of the season. One thing is certain, the coal operators who went into it, long for more freedom of action and a better opportunity to gain a reputation in the trade and receive some compensation for carefully preparing their coals. Circulars have been issued by the Reading RR. Co., advancing for the city and line trade 10 cents per ton on broken, egg and stove; 15 cents on Chestnut; No. 2 chestnut, lump, steamboat and pea, not advanced. A corresponding advance has been made on shipments from Port Richmond. The Reading Coal and Iron Company have out large posters announcing chestnut coal for sale at the Richmond dump (where they have 30,000 tons) at the low price of $4 00, and this, too, after the committee had advanced the price to dealers. This is the beginning of a break down.

Bituminous Coal, Wholesale.

Penn. and Westmoreland (Gas), f.o.b., Greenwich.....	6 25
Broad Top, (according to destination) f.o.b., Port Richmond	4 75@5 00
Clearfield f.o.b. at Greenwich, according to destination.....	4 75@5 00

Bituminous, Retail.

$6 00 in yard, per 2240 lb., cartage added.

Prices of Anthracite Coal for Sept., 1874, at Various Points.

Specially reported by the Riverside Coal Co., Wilkes-Barre, Pa. Wholesale, per ton of 2200 lb.

AT	Broken & Egg.	Stove.	Chestnut.
Buffalo, N. Y., f. o. b.....	6 55	7 00	6 50
Buffalo, " afloat.....	6 05	6 50	6 00
Rochester, " "	5 80	6 25	5 75
Weedsport " "	5 50	5 95	5 45
Syracuse, " "	5 10	5 55	5 05
Ithaca, " f. o. b. and afloat..	4 95	5 40	4 90
Charlotte, " "	6 05	6 50	6 00
Auburn, " afloat.....	5 40	5 85	5 35
Elmira, " "	4 75	5 15	4 90
Oswego, " f.o.b	6 05	6 50	6 00
* Chicago, Ill., afloat.....	6 90	7 35	6 85

* Broken coal for this point is 15 cents per ton less than these figures.

At Lackawanna and Bloomsburg Junction, for line of Pennsylvania and New York Railroad Company, per 2240 lb.:

Broken and Egg, $3 15; Stove and Chestnut, $3 40; Small Stove, $3 90.

Baltimore, Md.

Sept. 23, 1874.

Reported by our Special Correspondent.

There are no small size vessels here at present, almost all being over 500 tons. Our Cumberland coal trade is duller than we have found it at any time during the year. Not even the low freights will induce Eastern customers to buy.

WHOLESALE PRICES PER 2240 lb.

ANTHRACITE.

	afloat.	at depot.
Wilkes-Barre, "Lee," or "Diamond,"		
Lump, steamboat.....	$5 00	$5 40
Broken.....	5 25	5 50
Egg.....	5 62	5 90
Stove.....	5 82	6 10
Pittston and Plymouth.		
Lump, steamboat, and broken.....	....	5 45
Egg.....	....	5 80
Stove.....	....	6 00
Lykens Valley, red ash, all sizes.....	6 00	6 30

From wharf or yard, wholesale, 50@75c. additional. By retail, all kinds and sizes, per 2,240 lb, $7@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes.....	4 60 ....
West Va. Gas Coal f. o. b. at Locust Point.....	5 50 ....
Kanawha Cannel, coarse.....	13 00 ....
Tyrone.....	7 25 ....
Ritchie Mineral of West Virginia.....	1 00 ....

Boston.

Sept. 23, 1874.

Reported by our special correspondent.

CARGO PRICES TO TRADE.

Lingan coal.....	$ 5 75	Westmoreland.....	7 75
Caledonia.....	5 10	Waverly Co. Youghiogheny	7 75
Pictou.....	6 15	Cannelton Cannel	13 50
Block House.....	5 60	Cumberland.....	5 90@ 6 20
Red Bank Cannel.....	10 00	Anthracite.....	6 50@ 7 00
Glace Bay.....	5 40	" Retail.....	8 00
Sydney.....	7 25		

From the *Commercial Bulletin* of September 19.

Anthracite continues to rule very dull, even the slight quickening to the retailing demand having slackened. The proposed starting of the nail factories on Monday last has led to a sharp canvass for their needs for coal, but the reports are they have enough on their wharf and in shed to answer three months' requirements. The prospect that the breweries would start on new hops led to an inspiration for a sale of cargoes of broken to arrive, but there is no disposition among the beer men to commence opperations until into the winter. There was a rumor on the street that 1,500 tons Wilkes Barre ordered in June, and since countermanded, has been offered at the June price, but strict inquiry failed to establish its truth. There is absolutely nothing done among miners' agents or the corporations' representatives. The small amount of coal arriving is on orders in the spring months. We notice that some of the retail yards are delivering at $7 50, while to the more distant suburbs $8 a ton covers all charges.

The street is rife with rumors that the combinations are to throw up their leases on 40 collieries, and having control of the shipping facilities, curtail the production by shutting out these mines in plethoric times, also, that the Reading, Scranton and Pennsylvania companies will begin on the 1st of November to put their miners on half time until March.

Bituminous is slack. A cargo of Cumberland arriving on Tuesday was sold to a railroad at $5 80, and two cargoes later in the week wanting a place to unload were placed at $5 90. The end of the boatmen's strike at Georgetown has again enabled shippers to forward on early orders.

Burlington, Iowa.

Sept. 19, 1874.

Specially reported by Messrs. WIGHTMAN & CUMMINGS wholesale and retail dealers and shippers of coal.

Continue quotations.

Per ton of 2000 lb.

Lehigh Lump.....	$15 00	Illinois Smithy.....	$6 00
Lackawanna.....11 00@11 50		" Steam	3 75
Blosburg Smithy.....	13 00	Connellsville Coke	12 50
Pittsburgh "	10 00	Illinois "	10 00

Buffalo, N. Y.

Sept. 23, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb.

	Slack.	Nut & Slack.	Nut.	Lump
Connelsville coke.....				6 50
Sterling cannel.				6 00
Red Bank				5 75
Youghiogheny coal for gas.....				5 50
Briar Hill coal.....		3 25		5 00
Fairmount "		3 25	3 50	4 25
Catlish "		3 25	3 75	4 50
Stoneboro "	2 75		3 50	

Briar Hill coal, and Sterling and Red Bank cannels, at $8; all other coals $1 per ton above wholesale prices.

Anthracite f. o. b. vessel. Retail prices delivered and screened, $1 per ton additional.

Grate.....	6 55	Stove.....	7 00
Egg.....	6 55	Chestnut.....	5 60

Chicago, Ill.

Sept. 22, 1874.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

No change in prices of coal.

Retail prices per ton of 2000 lb. delivered to buyer.

		BITUMINOUS.	
Lehigh Lump.....	$10 75	Briar Hill and Erie	7 50@ ....
Lehigh prepared and car load lots.....	9 75	Walnut Hill (W. Va.)	6 50@ ....
Lackawanna, Wilkes-Barre and Pittston,*		Midway (West Va.)	6 50@ ....
Grate, egg, and chestnut.	9 00	Cannel.....	8 00@ 9 00
Stove or range.....	9 50	Glossburg.....	8 00
		Indiana Block.....	6 00
		Hocking "Brooks".....	6 00
		Wilmington and Illinois..	5 00

*75 cents off these prices for car load lots to country dealers and manufacturers.

Cleveland, O.

Sept. 21, 1874.

Reported by our Special Correspondent.

Quotations remain as follows:

Per ton of 2000 lb.

Youghiogheny, l'p, f.o.b.	$4 65	Straitsville, f.o.b.....	$3 40
Youghiogheny, nut.....	3 60	Columbiana "	3 40
Briar Hill, (Church Hill).	4 25	Strip Vein "	3 65
" " (Brookfield)..	4 10	Mountain Blossburg (blacksmith)., f.o.b....	5 75
Massilon, according to quality.....$3 40 to	3 65	Darlington and Sterling Cannel, f.o.b.....	4 50
Hocking Valley, f.o.b....	3 50	Egg.....	$6 85
Anthracite, Lackawanna on cars,		Stove.....	7 30
" " " "		Chestnut.....	6 90
Youghiogheny Coke, " "		here.....	5 50
Connellsville " " "		.....	5 75

Cincinnati, O.

Sept. 22, 1874.

Specially reported by Messrs. A. BUCHANAN & CO., wholesale and retail dealers in coal and coke.

We quote prices same as last week, with the exception of Pomeroy and Raymond City or Semi-Cannel. Pomeroy is 9c. per bushel afloat, and 13c. to 14c. delivered, and semi-cannel 15c. per bushel delivered.

Per ton of 2000 lb.

	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat.....12 c.		$2 86
Pomeroy coal..... .... 9 c.		
Cannel coal ....18c.		4 68
Semi Cannel..... .....10 c.		2 60

The following are retail prices delivered:

Youghiogheny..... .....16 c.	$3 90@$
Pomeroy.....13@14 c.	
Cannel.....24 c.	—
Kanawha Semi Cannel.....15c.	—
Anthracite.....	—
Foundry coke..... ..... 12c.	—
Soft coke..... 10c.	—

Council Bluffs, Iowa.

Sept. 22, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb.

		ON TRACK.	
Blossburg (blacksmith).	$14 50	Wyoming	14 00
Anthracite.....	15 00	Missouri	6 00
Iowa.....	4 50	Kansas.....	6 00
		RETAIL.	
Blossburg.....	$16 00	Wyoming	$12 00
Anthracite..... ..	16 00	Missouri.....	8 00
Iowa.....	6 50	Kansas	8 00

Detroit, Mich.

Sept. 22, 1874.

Specially reported by Messrs. ROBINSON & KEYS, dealers in all kinds of coal.

We have nothing better to report this week than a moderate trade at the same old prices, viz.:

Per ton of 2000 lb.

Lehigh Lump, per ton.	$10 50	Blossburg.....	8 50
Lehigh " prep. sizes.	9 50	Briar Hill.....	7 50
Wilkes-Barre, Grate and Egg.....	8 50	Willow Bank.....	7 00
Wilkes-Barre, Stove and Nut..... ..	9 00	Erie.....	7 50
		Massillon.....	7 00

Denver, Col.

RETAIL PRICES.

Per ton of 2000 lb.

Canon	$6 50	Boulder Valley	$4 75
Marshall	5 50	Eulner	5 50
Murphy	5 50	Black Diamond	5 50
Baker	5 00		

Erie, Pa.

Sept. 23, 1874.

Reported by our Special Correspondent.

Wholesale, per ton of 2,000 lb.

Anthracite f.o.b. vessels.

Lump	$6 60	Stove	$6 65
Grate	6 10	Chestnut	6 05
Egg	6 10		

Bituminous f.o.b.

Briar Hill	$4 40	Beaver	$4 25

Retail, per ton of 2,000 lb.

Anthracite.

Lehigh, chestnut	$8 50@$9 00
" prepared	8 75@ 9 25
Lykens Valley, stove	9 50@10 00
Lykens Valley, chestnut	8 00@ 8 50
Schuylkill and Wilkesbarre	7 50@ 8 00
Blossburg (Smithing)	7 50@ 8 00

Bituminous.

Chenango Valley (Ormsby), lump	$6 00
Mahoning Valley (Briar Hill), "	5 00
Nut, all kinds	4 00
No. 1 slack	3 06
Bituminous, by car loads to factories	5 35

Indianapolis, Ind.

Sept. 22, 1874.

Specially reported by Messrs. H. McCOY & Co.

Quotations remain as follows:

Per ton of 2000 lb.

BITUMINOUS.

Best Block coal	$2 90	Indiana cannel	6 50
Best Highland	2 40	Hocking Valley	3 00
Block Nut	1 65	Youghiogheny	5 42
Highland "	1 65	Blossburg (smithing)	7 30
Block slack, per car load	1 15 00	Piedmont "	7 75
Peytona, cannel per ton	8 50	Gas coke, per bushel	.9½c

ANTHRACITE (Lackawanna).

Grate	$8 70	Chestnut	8 60
Egg	8 70	Stove	8 85

Retail, per bushel of 70 lb.

Block	14c.	Peytonia Cannel	32c.
Highland	12	Indiana "	28
Highland Nut	9	Youghiogheny	25
Block "	9	Blossburg	27
Slack	7	Piedmont	30

ANTHRACITE.

	per ton.		per ton.
Grate	$10 50	Stove	$10 50
Egg	10 50	Chestnut	10 50

Louisville, Ky.

Sept. 22, 1874.

Specially reported by Messrs. BYRNE & SPEED.

Please report our coal market the same as last week.

Pittsburgh, per load of 1900 lb	$3 75
Pomeroy	3 25
Buckeye Cannel	5 50
Peytona Cannel	6 00
Nut and Slack	2 75
Kentucky lump, per load	3 25
" nut, "	2 75
" Slack "	1 60
City-made Coke, per bushel	10c
Kentucky on cars at wholesale, per bush.	10c
Anthracite, per ton	$10 to $10 50

Milwaukee, Wis.

Sep. 22, 1874

Specially reported by Messrs. R. P. ELMORE & Co.

Trade is active, quotations are unchanged.

Retail prices per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 50
Lehigh Prepared	10 50	Blossburgh	8 00
Lackawanna	9 50	Pittsburgh	7 50

Mobile, Ala.

September 19, 1874.

Per ton of 2000 lb.

	On Car or at Yard.	Delivered.
Montevallo, Ala., Slack Coal, (screenings)	$3 00	$4 00
New Castle, Ala., Coal	5 00	6 00
Montevallo Lump Coal, screened	9 00	10 00
Pittsburgh Coal, screened	9 00	10 00
Peach Orchard Coal, Red Ash	10 00	11 00
Virginia Cannel	14 00	15 00
English Cannel	17 00	18 00

The above prices are for car load lots of 10 tons and upward.

New Orleans, La.

Sept. 19, 1874.

Specially reported by Messrs. P. & R. DEVERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite and Cannel coal.

The market has a tendency to advance, though very few sales are made. We quote:

Pittsburgh coal, retail, per bbl	60c.
" wholesale	45c.
" to steamboats, per box	60c.
" to manufacturers, per bbl	55c.
Anthracite, retail, per ton	$12 50
" wholesale per ton	$9 50
Spadra (Arkansas) coal, retail, per bbl	75c.
Mt. Carbon, wholesale, per bbl	45c.
" " retail per bbl	65c.
Scotch Cannel, per bbl	1 00

Pittsburgh, Pa.

September 21, 1874.

Reported by our Special Correspondent.

Some few mines on the river are working at three cents per bushel. The mines on the Connellsville, Pennsylvania Central, and A. V. R. R., are working at three and a half cents. Some few mines on the Pan Handle Railroad are working at three and a quarter cents, but the large proportion of the men are holding out for four cents. However, a fire, which consumed the large trestle bridge on the Pan Handle Railroad, this morning, prevents, temporarily, the receipt of any coal from that road. Prices remain unchanged.

Per ton of 2000 lb. and Bushel of 76 lb.

	per ton.		per ton
Youghiogheny coal	$2 15	Pittsburgh retail delivered per bushel	9c@10c
" coke	2 75	Anth'cite on cars Lehigh	$7 75
Connellsville coal	2 25	" " Wilkes-Barre	6 75
" coke	3 25		
Pittsburgh coal	2 00		

Twenty-five to fifty cents per ton additional for delivery.

San Francisco.

From the *Commercial Herald*, September 10.

Imports of coal from January 1st to September 1st:

Anthracite, tons	5,700	Vancouver Isl'd, tons	34,867
Australian, tons	68,776	Bellingham Bay, tons	10,010
Coos' Bay, tons	33,650	Rocky Mountain, tons	313
Cumberland, tons	7,104	Seattle, tons	2,635
English, tons	6,594	Mt. Diablo (7 mos)	110,983

The market is well supplied with Cumberland, and in fact nearly all descriptions are in good stock. The *Ellen Goodspeed* is at hand from Baltimore with 1,700 tons from Cumberland, now on sale. The *Germania*, from Bellingham Bay, has 1,375 tons Bituminous. The *Shooting Star*, from Nanaimo, has 1,000 tons same, quotable at $10@10 50. Several cargoes of English Steam to arrive have been placed as low as $9, while a spot cargo of West Hartley sold last month at $11 75. The general tone of the market is in favor of the buyer, particularly for Australian Steam, which we quote to arrive at $9 50@9 75: spot parcels, $10@10 25. We quote Lehigh, $16@18: Pittston, ex ship, $13@14.

The California Mount Diablo and Black Diamond mines are quoted at $6 25@8 25 per ton for coarse and fine—the latter screenings being preferred by all local factories to the lump. We note the arrival of the British ship *Scaforth*, 73 days from Newcastle, N. S. W., with 1765 tons, and the Hawaiian bark *W. C. Parke*, 9 days from Nanaimo, with 903 tons. The arrivals on the 9th inst. were *Madame Demorest*, from Newcastle, N. S. W., with 548 tons, and the *Edith*, from Newcastle, England, with 1428 tons.

St. Louis, Mo.

Sept. 19, 1874.

Specially Reported by the COLLINSVILLE COAL AND MINING COMPANY.

ANTHRACITE.

Per ton of 2080 lb.

	City delivery.
Lehigh Lump	$13 50
Lackawanna and Wilkesbarre	12 50
Semi Anthracite	9 50

BITUMINOUS.

Per ton of 2000 lb.

	E. St. Louis.	City delivery
Washington Indiana—smithing	$4 00	$4 87
O'Fallon, Ills	2 00	3 00
Collinsville and Belleville, Ills	1 75	2 75
Indiana Cannel	6 00	7 00
Missouri Cannel		5 00

Retail, 25c. per ton additional.

Montreal.

Sept. 22, 1874.

Reported by our Special Correspondent.

In my last letter I reported a very depressed coal market, but hardly anticipated so serious a decline as has since occurred. There being but little freight offering in England for the St. Lawrence, a large number of vessels have brought coals as ballast or cargo, and steamers plying between here and the Lower Provinces have also taken coals at Pictou or Sydney on their own account. All these being thrown on the market at a time when trade is depressed and consumption restricted, has caused a glut, and sales have been made at prices far below cost. Scotch steam has sold at $4.50, and Pictou as low as $4.25. Cargoes are now being put in yard unsaleable at over $4. Capitalists are taking advantage of this to purchase stock for next year, and some are buying to hold for the winter on speculation.

Freights from the lower ports have consequently fallen, and vessels are unable to obtain $2. A contract for 2000 tons delivered 40 miles below Montreal, was awarded to the Nova Scotia Coal Company at $4.65.

Smiths' coals are equally in overstock, and best Newcastle has been sold at $4.75. Lower Ports smiths' has been sold for the freight.

Anthracite coal is also in abundant supply, canal freights being very low. New agencies have been opened for Pennsylvania coal companies, and there bids fair to be lively competition in this trade.

Retail prices are as follows, though many dealers probably sell lower.

Per ton of 2,240 lb.

Scotch Steam	$4 50@4 75	Cape Breton Steam	$4 00
Pictou "	4 25	Newcastle Smiths	5 50

Anthracite at retail, 2,000 lb., delivered, less 5 per cent.

Egg	$8 00	Nut	$8 00
Stove	8 50	Chestnut	7 75

Toledo, Ohio.

Sept. 19, 1874.

Per ton of 2000 lb.

Specially reported by Messrs. GOSLINE & BARBOUR.

Retail.		Retail.
Wilkes-Barre and Scranton, Large and Small Egg	$8 00	BITUMINOUS.
Stove	8 25	Blossb'g and Cumberl'd, $8 00
Chestnut	8 00	Massillon Lump	6 00
Lehigh Lump	10 00	Briar Hill	7 00
		Straitsville	3 75
		Hocking Valley	4 00

Halifax, N. S.

Sept. 21, 1874.

Reported by our Special Correspondent.

Please revise your quotations as follows:

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 50	Little Glace Bay	3 50
Gowrie	3 50	Blockhouse	4 00
Victoria	3 75	Albion (at Railroad)	4 25

Toronto, Ont.

Sept. 12, 1874.

Reported by our Special Correspondent.

The prices and terms of the Toronto Coal Exchange remain as follows:

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Points.

From Mauch Chunk to New York "towing limits," via Morris Canal $2 65

From Mauch Chunk to Jersey City "for reshipment," via Lehigh Valley R. R. 2 45

* *From Phillipsburg to Hoboken* "for shipment," via Delaware, Lackawanna & Western R. R. 1 28

† *From Penn Haven to Elizabethport, Port Johnston and Hoboken*, via Central railroad of New Jersey 2 35

‡ *From Mauch Chunk to Elizabethport, Port Johnston, Hoboken and South Amboy*, via Lehigh Valley R. R. 2 25

From Port Delaware to New York and Jersey City, via Morris Canal 1 74

From Mauch Chunk to Philadelphia via N. P. R. R. 1 75

From Schuylkill Haven to Philadelphia, via canal. Freight 65c., tolls $1 10 ..... 1 75

From Tamaqua to Port Richmond "for shipment," via P. & R. R. R. 2 07

From Schuylkill Haven to New York, via canal 2 72

From Upper Lehigh to Jersey City, via Central R. R. of N. J. 3 24

From Tamaqua to Philadelphia, via Phil. & Read. R. R. main line 2 17

On canal coal at Jersey City an additional charge of 20 cents per ton will be made for transferring coal from boat to boat, and thirty cents per ton for placing the same on the wharves and re-shipping.

The rate on coal for way-points on the New Jersey railroads will be $1 15 per ton from Mauch Chunk to Phillipsburg.

* 52 cents additional to this rate is added on coal for consumption.

† The rate from Phillipsburg to these points is about $1 per ton less. This rate does not include wharfage or shipping expenses at tide ports.

‡ From Penn Haven to these points it is 16 cents additional, and from Phillipsburg the rate is 91 cents less.

Freights on Bituminous Coals from the Mines to Tide-Water Shipping Ports.

From the Mines to Cumberland and State Line (say an average of 20 miles) the charge is 3 cents per ton of 2240 lb. per mile.

From State Line to Amboy, (346 miles) $4 00 per ton of 2000 lb. On coal shipped beyond that point there is a drawback of 50 cents per net ton.

From Cumberland to Baltimore, (178 miles) $2 58 per ton of 2240 lb., or $2 30 per net ton, and 4 cents per gross ton for use of cars.

From Cumberland to Georgetown, (152 miles) by canal, $1 76 per ton of 2240 lb. *To Alexandria, Va.*, 11 cents per ton more.

From the Mines to Piedmont, (from 4 to 10 miles) 5 cents per ton of 2240 lb. per mile on distances less than 5 miles, and 4 cents per ton per mile on distances not over 10 miles.

From Piedmont to Baltimore, (206 miles) $2 97 per ton of 2240 lb., or $2 65 per net ton.

From any point in the Kanawha Valley to the James River wharves below Richmond (say 350 miles) by C. and O. R. R., including terminal charges, per ton of 2000 lb., for Cannel coal, $5 35. Subject to rebate on large quantities.

Do., do., for Semi Cannel or Splint, $3 65.

From Hawks Nest to Richmond (say 300 miles) the freight on Bituminous or Splint is $3 25 per ton of 2000 lb; on Cannelite it is $5 00.

From Irwin to W. Phila. (say 332 miles) per P. R. R. Penn. Westmoreland gas coal, per ton of 2000 lb $5 00

From Osceola to W. Phila. (say 248 miles) per T. & C. R. R. per ton bituminous coal of 2000 lb 3 55

From Fairmount and Clarksburg to Baltimore (say 300 miles) via B. & O. R. R. including loading, per 2000 lb 5 20

On through coal after deducting drawback 4 15

From Richmond, Va., to New York, 392 miles per 2000 lb. 2 10

" " " Boston about 650 " " 3 00

" " " Philadelphia 292 miles " 1 75

From the Mines to Richmond via James River and Kanawha Canal, 15 miles 52

Freights.

Freights are dull, vessels are very plenty, and rates are unchanged, as compared with our last. We quote the rate to Boston at $1 25, Providence $1, and Portsmouth $1 35; $1 50 is freely accepted to Boston from Philadelphia. We note the charter of a 300 ton schooner from Georgetown to Boston at $1 40; the rate from Baltimore to the same point is about the same.

REVIEW OF THE BRITISH COAL AND IRON TRADES.

Compiled from our Exchanges bearing date o Sept. 11, 1874.

From the British Board of Trade returns we extract the following statistics, relative to the exports of iron and coal for the first eight months, ending August 31, 1874, compared with the corresponding period of last year.

Pig Iron, 1873	436,038 tons.
" " 1874	289,410 "
Showing a decrease this year of	146,628 tons.
Coal, Coke and Manufactured Fuel, 1874	8,910,616 "
" " " " " 1873	8,309,571 "
An increase, as compared with last year, of	601,045 tons.

The North of England trade still continues in the unsettled condition noted in our last. As yet, neither the colliery owners

nor the men are disposed to recede from their determination to stand by their original position. A difficulty is also impending in Leeds and West Yorkshire between the coal miners and their employers; it is probable, however, that the men will submit the matter to arbitration. The general disposition among colliery owners and consumers throughout the Kingdom is to accumulate stocks as a protection against strikes; this fact, in connection with the usual demand for winter supplies, imparts a temporary firmness and even buoyancy to the trade.

House coals have advanced 2/ during the week under review, with an active demand. Original Hartlepool is quoted firm at 27/.

The iron market does not partake of the buoyancy or firmness characteristic of the coal trade; were it not for the apprehension of a possible continuance of the strike, the market would be flat.

Barnsley and South Yorkshire.—The coal trade in this district has improved within the past few weeks. The best qualities of Silkstone and Barnsley house coal are being sent away in large quantities, and at higher prices than can be obtained for the rest of the fuel. The notice given by the West Yorkshire coal owners for another 20 per cent. reduction is having its influence on the trade. Buyers decline to purchase unless for immediate wants. On the other hand, coal-owners do not care to take contracts at any reduction, believing that if a strike or stoppage takes place they will be better off. The demand for steam coal holds well up, and many of the pits are doing a good business with Grimsby and Hull, where shipments to the North of Europe are being pushed forward in anticipation of the closing of the Baltic ports. The output of pig iron remains steady, there being no great change in the number of furnaces in blast. The Bessemer steel works are pushing on, and fully an average trade is being done in rails.

Barrow-in-Furness and North Lancashire.—The iron trade of this district is still improving gradually and slowly. There are evidences on almost every hand that a better state of things may be expected shortly. The demand for Bessemer iron is daily improving, and manufacturers have no difficulty in disposing of all the iron they make of this character. Ordinary hæmatite iron is in rather better request; but makers could dispose of more than users and buyers are at present inclined to purchase. The value of both Bessemer and ordinary hæmatite has been advanced fully 3/ 6d. per ton, the former now standing for delivery at £4 17/ 6d., and the latter at £4 12/ 6d. to £4 15s. Stocks of iron are reported to be diminishing; indeed, of Bessemer qualities, there are very few parcels remaining in manufacturers' yards. Iron ore sells slowly, and few purchases are reported. There is no reduction to report in the value of coal; but a decline is expected before the close of the present month.

Durham.—The impending difficulty in the Durham coal trade, in respect of the wages question, is almost the only topic talked of in the iron and coal trades of the North of England. The future of trade centres upon whether the dispute be amicably arranged, or the reverse. The coal-owners gave the underground men notice on Saturday last, which will expire on the 19th, when the reduction will take effect. The Secretary of the miners strongly urges the men to accept arbitration, which is offered by the masters. A meeting of the men's delegates will take place to-morrow (Friday). The iron-workers have also had notice, in some cases to terminate when the pitmen's notice does, as the cutting off the coal supplies will stop the iron works, except in so far as they can be carried on by coal in stock. Trade has been quiet, except where small orders are placed for immediate execution. The rates of pig iron have, on the whole, been stiffer. No. 1 is 72/ 6d.; No. 3, 68/ to 70/; No. 4 forge, 58/ to 60/, nett cash. Makers, in view of a probable strike of the pitmen, are not pushing sales. Manufactured iron is not largely sought after. Rails are £7 15/ to £8 for ordinary sections; ship plates are £9 5/ to £9 10/ per ton. Common bars are £8 15/ to £9 per ton; angle iron, £9 to £9 10/ per ton; boiler plates, £10 to £10 10/. The better classes of coal have been largely inquired after, but small and unscreened lie heavily on the market. The rates of coke, in prospect of the strike, have increased by 2/ 6d. per ton.

Forest of Dean.—The prospects of the district iron trade are certainly improving, stocks having diminished, in some instances, to a considerable extent, and in others they are held back, in the hope that prices will very shortly improve. As indicative of an improvement, preparations are being made in the Cinderford Valley for an increase of make, and there are not wanting instances in other parts of the Forest of a preparation to increase the existing output of Forest pig iron. Steps which are being taken in this direction are brightening the hopes of Foresters, who look forward to an extended make of pig iron to the giving not only increased employment at these works, but the pits likewise, which depend, to some extent, upon the demand for pig iron. The position of the coal trade is improving, there being a decidedly better demand for the hard class qualities, and the collieries which more particularly suffer are those yielding nesh coals. No alteration has been made in the price, and local consumers are paying at the collieries 17/ per ton. The several disputes at the "Regulator," "Wimberg," and other pits are still undecided, there being no disposition on the part of the men, who are affected—a few hundred in number—to accept the terms offered.

Lancashire.—The improved tone on the iron market of this district referred to of late continues. Inquiries are more numerous both for pig-iron and manufactured iron, and a considerable amount of business is being done quietly. All the principal makers are fully engaged for the next month or six weeks, and there is now greater difficulty in placing orders. No great change has taken place in prices, which remain nominally the same, but it is almost certain that an advance will soon be demanded for pig iron of the better qualities. No. 3 foundry pig iron is quoted at from 75/ to 77/ 6d. per ton, and forge numbers at from 67/ 6d. to 72/ per ton, delivered in the Manchester district. Bars are worth about £9 15/ per ton, but makers from other districts have been offering as low as £9 5/ to £9 10/ per ton; sheets about £12 15/ per ton, and boiler plates about £13 10/ per ton delivered. The smelters in South Lancashire are now generally fully supplied with orders. All the forges are busy, particularly in bars and sheets, the demand for export having been considerable of late, and as the shipping season draws to a close this will increase. The coal trade continues rather quiet but rather a firmer tone has been given to the market by the anticipation of a strike in West Lancashire. There is, however, plenty of coal on offer, and in some quarters very low prices accepted rather than miss orders. Next month the consumption of house coal will naturally largely increase, and should the requirements of the iron trade be of the ordinary character, there is every probability of present prices being maintained. The unsettled state of the market, however, prevents consumers from buying largely forward, and though this may temporarily lead to a weakness in the price of some descriptions of coal, stocks generally are too low to justify any belief that prices will be materially lower this year. The Manchester market has been a trifle steadier, although little business has been done. The house coal trade is moderately good for the time of the year, but for furnace coal there has not been quite so much demand and burgy and slack, where full prices are maintained, are quiet. The collieries in the Tyldesley district are generally fairly employed, and stocks continue low without any material alteration in prices. We quote best coal at the pits mouth at from 12/ to 13/ for furnace coal; 10/ and 8/ for burgy and about 7/ for good slack. Trade in the Wigan district is very much deranged by the unsettled state of the labor question. Consumers on the one hand are looking forward to lower prices, after the wages have been reduced, and are therefore holding off, whilst others are covering their requirements in anticipation of a strike. Prices at present remain without any material change, and although coal is still being put down on the pit banks there is no large increase in stocks. In the shipping trade there is a fair demand, both coastwise and foreign, and best qualities continue tolerably firm, but common coals, although still nominally unaltered, are a trifle easier.

Monmouthshire and South Wales.—Our iron trade, although improving, does not show signs of any great activity. The men have accepted the reduction in wages, but do not settle down to their work. Orders are plentiful, but we cannot quote any rise in prices over last week; nor do we think our last figures will improve much this year, for there are still several furnaces out, which will only be blown in should a great pressure of work come. The steel rail makers are not busy, and some who quote £9 10/ have lost orders, these having been placed in other districts at lower figures. Demand for iron ore is still almost nominal. With respect to our steam coal market, we have to report a decided advance in prices; for first-class qualities, 18@19/, and other descriptions, 16@17/ double-screened is quoted. Our docks are full of tonnage, waiting for cargo, and many vessels are on demurrage. The number of arrivals is moderate; most of the first-class steam coal stems are full for the next two months. The miners have not yet settled to work, owing to a dispute amongst the haulers at several pits; but we hope, in a day or two, all the mines may be again in working order, and for the remainder of this year we look for a brisk trade and steady prices. A good deal of complaint is made about the prices charged by the colliery proprietors for local consumption; this consumption in such populous and extensive districts is necessarily large, and as much as 17@18/ per ton is asked in the vicinity of the pits, while the same coals are sold at 12/ for shipment.

Glasgow.—The warrant market has shown considerable animation this week, and the daily fluctuations have embraced a more extended range of prices than we have lately been accustomed to. The stock has also been getting into fewer hands, so that it is not unlikely that a further rise may take place, assisted, as such a movement would be, by the expected strike of the colliers in the North of England. The shipments still show an excessive falling off, and the usual autumnal demand does not yet seem to have made its appearance. The market opened steady on Thursday at 82/ 4½d. cash, but declined to 79/ 3d., improving, however, on the following day, and 79/ 9d to 81/ 3d. cash paid. On Monday a further advance from 81/ 9d. to 83/ was maintained. Opening strong on Tuesday at 84/ 6d., it gave way on pressed sales to 82/ 9d. cash, but was again firm on Wednesday at 84/ to 83/ 9d. Closing—sellers, 83/ 9d.; buyers, 83/ 6d. prompt cash. But for the strike in the counties of Fife and Clackmannan we should, by this time, have had a considerable reduction in the price of coals. The subtraction of the labor of the 6,000 miners in those counties has materially diminished the total output of the country, but yet the supplies are most ample all over the West at the rates that have been current since the last reduction.

IRON MARKET REVIEW.

New York.

Sept. 25, 1874.

If the sun of the coming day of prosperity in the iron trade is to rise in the East, we can as yet see no signs of its rays, except it be the proverbial sign, "that it is never so dark as just before day." While we are, of course, approaching better times and a stronger market, there is little to encourage us in the present state of trade. Dealers generally would fill contracts at present prices for delivery during the balance of the year, and the autumn orders, which usually come early in September, have as yet not been received. We are getting familiar with this state of things, and the less said about it the better. But, generally, close economy will be practiced throughout the winter, and the return to general prosperity will be so gradual that we cannot say whether it will be next month or three months hence, or any particular time; but it will come back little by little, and revive the country as the dew and gentle rain does the parched fields. Prices are scarcely steady and no increase; but we have a few more sales to record than for the previous week.

The Scranton mill has gone to work, the most of the men having accepted the $3 50 per ton wages for puddlers.

American Pig.—We note a sale on private terms (subject to approval of quality) of 1000 tons jagger iron; this closes out the hypothecated lot which has been hanging over this market for the past two months. We continue to quote No. 1, $30; No. 2, $28; forge, $25@$27.

Scotch Pig.—Very small stock, which is held firm at $35@$37 for Eglinton, $38 for Glengarnock. We note the sale of 200 tons Eglinton, at $34 25; and 100 tons Coltness, just arrived, at $37 50, gold. There is some Scotch iron on the way which is held at full prices. Prices at Glasgow have advanced several shillings. Telegraph advices quoting Eglinton at 92/, Glengarnock, 100/; Coltness, 115/; and Gartsherrie, 113/; while mail advices to the 11th inst. quote these brands, respectively, 86/, 97/, 107/ 6d and 107/ 6d. At that date there were 110 furnaces in blast and 46 out. The stock on hand in Glasgow had still further declined to 18,942 tons, against 41,386 tons same date last year.

Rails.—We note the sale of 1200 tons iron rails on private terms, understood to be about our quotations. Also the sale of 4000 tons, for future delivery, on private terms. We quote American, at the mills, $55@56. Foreign, nominal, $48@$50, gold.

Old Rails.—We note the sale of 1,400 tons, being the balance of the hypothecated lot, on private terms. This, and the sale of pig noted above, closes out this entire lot, and will remove one source of depression from the market. The railroads are offering large quantities of old rails at very low figures, and it is doubtful if $30 could be obtained here to-day.

Scrap Iron.—There have been no important transactions. The sale of 600 tons for New Bedford, reported by us last week, is still doing service with the papers. We quote $33@$35.

Boston.

September 19, 1874.

From the *Commercial Bulletin.*

Pig continues very dull, and lots of good No 1 American are freely offering at from $27 to $34 per ton on wharf. There is no disguising the fact that this week iron is lower than it has been at any time, and there does not seem to be any especial encouraging prospect of a material improvement. The reports from Pennsylvania and Missouri are not very flattering, while two or three New Jersey blast furnace men, canvassing our market, collect no flattering results. In this state of affairs the fancy brands, and the reputation of makers of pig iron are lost in the multiplicity of new names and heretofore unknown brands, which in quality of softness and strength are pitting against the old favorites on a guarantee and at a much lower price. In fact, the anxiety of some holders to sell, has placed prices in this market below those at the producing points, and given all quotations a nominal condition—where this will end the next four or six weeks must determine.

Bar is selling out of store in small quantities at $64 50@65-00 per ton, the highest rate being 30 per pound, or $67 50. This, as previously shown, is below the Pittsburgh markets. The Pickwickian resolutions of the Chigago dealers have been the source of much amusement, as Boston drummers are at this moment unable to compete with that market in low prices, even at the somewhat demoralized point we quote as our selling rates. The following is the manifest:

SIR: At a meeting of the Iron and Nail Association, held in Pittsburgh, Aug. 25, the price of merchant iron was advanced 82 8-10 cents, card rates.

At another meeting held Sept. 9, it was agreed to maintain the advance. These meetings were very generally attended by the manufacturers of Ohio and Pennsylvania, and appear to have been made in good faith.

The undersigned iron merchants of Chigago have advanced the price from stock to 32 2-10 cent to rates, according to quantity, at the same time reserving the right to protect their trade as against any outside parties.

HALE, AYER & CO.,
KIMBARK BROS. & CO.,
PARKHURST & WILKINSON,
KIRK & BARKER,
JONES & LAUGHLINS.

CHIGAGO, Sept. 12, 1874.

Chicago

Sept. 22, 1874.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Quotations remain as follows:

No. 1 Coltness	$46	00@	....
No 1 Gartsherrie	45	00@	....
No. 1 Summerlee	44	00@	....
No. 1 Glengarnock	42	00@	....
No. 1 Eglinton	40	00@	....
Warner's "American Scotch"	41	00@	....
Massilon No 1 Foundry	37	00@	....
No. 1 Grand Tower Mo. ores (Bituminous)	35	00@	....
No. 2, " " "	32	00@	....
No. 1 Mill	31	00@	....
Union "A" 1 (Anthracite)	34	00@	....
Union "B" 1 (Anthracite)	32	00@	....
No. 1 Lake Superior (charcoal)	36	00@	....
No. 2 Lake Superior "	34	00@	....
No. 3 Lake Superior "	36	00@	....
No. 4 Lake Superior "	42	00@	....
Bessemer Steel Rails	90	00@95	00
New Iron Rails	55	00@	....
Old Rails	28	00@	....

Cleveland.

Sept. 22, 1874.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore.

Market firm, at prices below, on 4 months time. Discount for cash, 3 per cent.

No. 1, Anthracite Foundry	$35	00@	....
No. 2, " "	34	00@	....
No. 1, Bituminous "	31	00@	....
No. 2, "	29	00@	....
No. 1, " Gray Forge	28	00@	....
No. 1, Massilon Black Band	36	00@	....
No. B-1 " "	34	00@	....
No. 2 " "	32	00@	....
No. 1, Lake Superior Charcoal	34	00@	....
No. 2, " "	33	00@	....
No. 3, " "	35	00@	....
No 4, " "	37	00@	....
Nos. 5 and 6 "	39	00@	....
American Scotch, No. 1, Cherry Valley	35	00@	....
" " No. 2	32	00@	....

Cincinnati.

Sept. 22, 1874.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Our pig iron market for the past week has been devoid of any interest. With increasing stocks, and a very limited demand, prices are less firm, though not quotably lower.

CHARCOAL.				
Hanging Rock, No. 1, Foundry	$33	00@34	00—4	mos
" No. 2, "	30	00@32	00—4	mos
Mill	28	00@29	00—4	mos
Tennessee No 1, Foundry	31	00@32	00—4	mos
Tennessee. No. 2 "	29	00@30	00—4	mos
" Mill	27	00@29	00—4	mos
Missouri, No. 1, Foundry	34	00@35	00—4	mos
STONE COAL.				
Ohio No. 1, Foundry	30	00@32	00—4	mos
" No. 2, "	28	00@29	00—4	mos
Ohio Mill	27	00@28	00—4	mos
Missouri, No. 1, Foundry	31	00@32	00—4	mos
" No. 2, "	29	00@30	00—4	mos
" Mill	27	00@29	00—4	mos
CAR-WHEEL.				
Hanging Rock, C. B	50	00@55	00—4	mos
Tennessee "	45	00@48	00—4	mos
Missouri "	45	00@48	00—4	mos
Alabama "	45	00@50	00—4	mos
BLOOMS.				
Charcoal	80	00@90	00—cash	
SCRAP IRON.				
Cast	80@	90—cash		
Wrought	1 25@	1 50—cash		

Indianapolis, Ind.

Sept. 21, 1874.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

There is nothing new to offer in the metal market. As in former quotations the demand is very light and inside prices only obtained.

Present quotations are as follows:

New Rails at mill	$62	00@64	00	
Old Rails "	30	00@31	00	
Hanging Rock Charcoal Pig No. 1 foundry	35	00@36	00—4	mos
" " " " " 2 "	32	00@33	00—4	mos
" " " Mill	29	00@31	00—4	mos
STONE COAL.				
Indiana No. 1 Foundry pig Planet furn'e,	32	00@34	00—4	mos
" 2 " " "	31	00@32	00—4	mos
" 1 Forge " "	29	00@	....—4	mos
" 2 " " "	27	00@	....—4	mos
Ohio No. 1 Foundry pig	33	00@34	00—4	mos
" 2 "	31	00@32	00—4	mos
" 1 mill	28	00@30	00—4	mos
Merchant Bar, card rates	60	00@62	00—3	mos
1st quality C. H. No. 1 Boiler Plates, per lb.	5¾@6	c.—3	mos	
1st " Com Sheet, for No. 24, W.G. "	5	c.—3	mos	
1st " Charcoal Sheet " " "	6	c.—3	mos	
Best Bloom Galvanized Sheet, discount 20 per cent	....—cash.			
2d quality " " " 30 "	....—cash.			

f. o. b. in Indianapolis.

Louisville.

Sept. 22, 1874.

Specially reported by GEORGE H. HULL, Esq.

The market remains about the same as at last report. Cold blast irons are neglected, and quotations for this class must be regarded as nominal. The demand for hot blast is light, and prices are without material change. The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.			
No. 1 foundry, from Hanging Rock ores	$32	00@34	00
No. 2 " " "	29	00@30	00
No. 1, forge, " "	27	00@28	00
No. 1, foundry, " Tennessee "	30	00@32	00
No. 2 " " "	28	00@29	00
No. 1, forge, " "	26	00@28	00
No. 1, foundry, " Alabama "	30	00@32	00
No. 1 " " Iron Mountain "	32	00@34	00
HOT BLAST—STONECOAL.			
No. 1, foundry, from Missouri ores	33	00@34	00
No. 2, " " "	30	00@31	00
No. 1, forge " "	29	00@30	00
COLD BLAST—CHARCOAL.			
Car Wheel from Hanging Rock ores	50	00@55	00
" " Tennessee "	46	00@48	00
" " Alabama "	48	00@50	00
" " Georgia "	48	00@50	00
" " Missouri "	45	00@48	00
" " Kentucky "	48	00@50	00

Milwaukee, Wis.

Sept. 21, 1874.

Specially reported by Messrs. R. P. ELMORE & Co.

The market and prices remain much the same as quoted last week; if anything, the pig iron trade is a little more lively, there being a general inquiry; more than for some time past.

Per ton of 2,240 lb.

Scotch ranges	$40	00	to	$45 00
No. 1, Lake Superior Charcoal	36	00	to	38 00
" 2, " "	34	00	to	36 00
" 1, " Anthracite	35	00	to	36 00
" 2, " "	33	00		

San Francisco.

From the *Commercial Herald* of Sept. 10.

We continue to receive Pig Iron of superior quality from Oregon. The steamship *John L Stephens* brought down 45 tons, which is held at $46. The general market is devoid of all animation, not only as regards Scotch, English, and American crude Iron, etc., but also for all manufactured goods. At the Fair may be seen all descriptions of California wire goods, copper ware in variety, saws, chisels, axes, etc., all guaranteed to be of good quality. THOMAS H. SELBY & Co. make a handsome exhibit at the Fair of their Lead products, Pig, Bar, Sheet, Lead Pipe, etc. This establishment has now the control of these goods. The price of SELBY'S California drop shot is fixed at $2 37½, less 10 per cent. to the trade; lead pipe, 9c.; sheet lead, 10c.; bar, 6¼@7c., according to quantity. As before stated in these columns, the stock of Scotch Pig Iron has been concentrated in few hands. The present asking price for Glengarnock and Eglinton Iron is $47 50. Tin plate is quite a drug in the market.

Pittsburgh, Pa.

September 22, 1874.

Specially reported by A. H. CHILDS, Esq., commission merchant for the sale of pig iron, blooms, ore, &c.:

The market remains substantially as per last report. Consumers are buying sparingly, in the belief that little, if any, advance will occur during the remainder of the year. Still it is generally admitted that some advance in prices seems less improbable than a further decline. Quotations are:

No. 1 Foundry, anthracite or bituminous	$28	00@29	00—4	mos
No. 2, " "	27	00@28	00—4	mos
Gray forge " "	26	00@26	50—4	mos
White and mottled " "	24	00@25	00—4	mos
Hot blast charcoal	35	00@38	00—4	mos
Cold " "	45	00@50	00—4	mos

Philadelphia, Pa.

Sept. 23, 1874.

I wish I could report to you even the partial revival of the long promised revival in the iron trade, but it has not yet come, nor does it now seem likely that it will this autumn or winter. The truth is, that there are too large stocks on hand waiting a market, not a market at a paying price, but every sort of a price that will put money into the hands of the makers and deplete the stocks. This is a state of affairs that I know is not pleasant to tell, yet it is true, and it is better that the truth should be known. There is a moderate demand in this city for pig and bar iron to meet the current requirements of the founderies and for manufacturing purposes and the retail trade. The nominal prices, as before, No. 1, $30; No. 2, $28; forge, $25@27. Actual sales are, in most cases, from 5 to 7½ per cent. lower. It is, however, very difficult to get at the actual sales and prices, "private terms" are so much the fashion that it is useless to question.

METALS.

NEW YORK, Sept. 25, 1874.

Gold Coin.—During the week past, gold has ranged from 109⅞ to 109¾, and closed yesterday at 109½.

Bullion.—Fine silver bar is quoted at $1 25½@$1 26¼, gold, per ounce, and fine gold bar at ⅛ discount ($20 67, gold, per ounce.)

Copper.—There have been some sales amounting to about 250 or 300,000 lb. for domestic use. The market is very firm and advancing. It is now quoted at 21¼ firm and as high as 21¾. The impression among the dealers is that the price will continue to advance to 22 cents. The mining companies are out of the market and name no price below 22 cents. Baltimore is quoted at 21c.@21¼c. The prices abroad have advanced, and telegrams yesterday quoted Best Selected £89, and Chili Bars £80.

By our mail advices Messrs. JAMES & SHAKESPEARE report as follows:—"The Chili telegram came to hand on Friday morning last and advised charters of 2,100 tons pure for the latter half of August, of which 1,800 in bars and ingots, the remainder in ores and Regulus. Although about the usual average, the news had a rather depressing effect, and importers accepted as low as £77 for good ordinary brands to arrive, at which figure a few spot parcels likewise changed hands. An improved demand then set in, and a good trade has been done during the current week, resulting in a rise of about 20/ per ton from the lowest point, and sellers scarce at the nominal quotations.

"Australian sorts are being more fully taken, and some fair sorts of Wallaroo have been purchased for shipment to the North of Europe. This brand has advanced about the same as Chili bars, but prices for other makes are somewhat irregular.

"English participates in the general improvement, and makers are tolerably well supplied with orders."

Lead.—The market is firm, with a good consumptive demand at $6 05@$6 10, gold, the government price being $6 gold. About 150 tons domestic and 200 tons government have been sold. Foreign is quoted firm at 6⅜c@6¾c., gold.

Our latest London advices inform us that smelters are asking a further advance of 2/ 6d. per ton.

Spelter—Spelter is fairly active at 6½c.@6¾c. currency, while foreign is quoted about the same in gold. C. G. H. is held at $6 80 gold.

Our London advices state that "in foreign spelter specials have been in demand at £22@£22 12/ 6d. according to brand, while English has ruled rather irregularly at £22 15/@£23 10/."

Zinc—Is firm, with small stocks. We quote at 8@8¼c., gold, for American and foreign.

Antimony—Is in better demand, and is quoted 11⅛@11¼c., gold.

Tin.—There has been no material change in this market during the week, there is a good demand. We quote: L. & F. 21c., Refined 21¼@22c., Straits 22¼, gold.

Cable advices quote English common 97/, refined 101/@102/ per cwt

Mail advices to the 11th inst. state: "Straits has fairly maintained its value at 92/@93/, and for arrival 91/, while Australian ingot has offered freely at 90/@90/ 6d. spot and landing, at which about 250 tons have sold, chiefly at the former figure. At the Dutch Trading Company's Sale, announced for the 29th inst., 22,300 slabs will be offered, being about the quantity expected. Engish Ingot is in fair request at 94/ 6d.@95/."

Tin Plates.—There is a good demand, and prices are well maintained, a moderate jobbing business being done. We quote I. C. charcoal, $9 75@10 per box; coke $7 75@8; coke terne $6 75 gold.

London advices say:

"There is more demand, and prices are steadier," and quote best brands, 37/.

Manganese.—Full supplies of New Brunswick Manganite are coming in, and are offered for export to Europe; from Georgia, likewise, a better quality of 80 per cent. is in market. Real Pyrolusite, in crystal, 7c.; imported from Saxony, 8c.; Virginia hard Psilomelane, 3c.; Georgia, mixed, $40 per ton; New Brunswick, 65 and 75 per cent., 3½c. per lb.

Quicksilver.—The price at San Francisco, is quoted at $1 45. In London, it is quoted nominally £23 per flask (75 lb.) The New York market is a very limited one, and it may be quoted at $1 60@$1 65. San Francisco advices say: "There is a slight increase of supply from the various new mines that are being opened, but with all these streams the whole combined goes but little way in making good the deficiency in product at the New Almaden mine."

Miscellaneous Stocks.

NEW YORK, Sept. 25, 1874.

The following list, as compared with our last, exhibits a slight advance in all of the Railroad and Canal shares. The dealings in nearly all of the items have been very large during the past week. The quotations, with the exception of the coal companies, represent the prices at which actual sales were made during yesterday's transactions. At the Philadelphia Stock Board 15,000 shares of Lehigh Navigation changed hands within the limits of our quotations, closing firm at 46½. The United Companies of New Jersey announce a quarter dividend of 2½ per cent., payable October 10, at the offices of the Pennsylvania Railroad Company in Philadelphia and New York.

	Bid.	Asked.
New Jersey Central R. R. Co	—	106
American Coal Co	—	61
Maryland Coal Co	20	—
Pennsylvania Coal Co	240	245
Quicksilver Mining Co	—	32¾
Reading R. R. Co	56	56⅛
Delaware and Hudson Canal Co	114½	—
Lehigh Coal and Navigation Co	46⅜	46½
Lehigh Valley R. R. Co	62⅜	62¾
Catawissa Preferred	42¾	43¼
Delaware, Lackawanna and West. R.R.Co.	—	105
Consolidated Coal Co	48	—
Little Schuylkill R. R.	48	48½
Huntington & Broad Top R. R. prefrd	12⅛	13⅜
St. Louis & Iron Mountain	—	16
Morris Canal Preferred	123	125
Susquehanna Canal	6	10

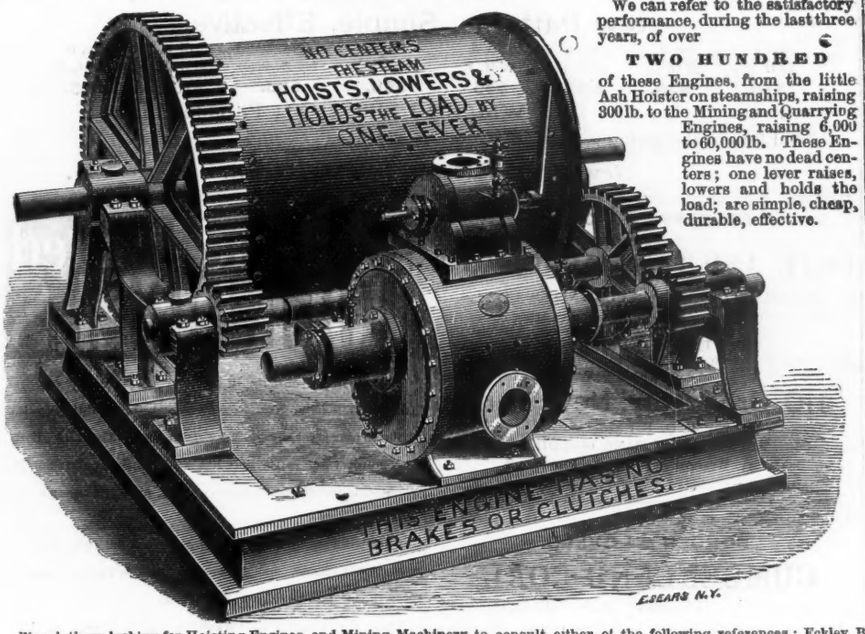
Boston Stock Market.

BOSTON, September 24, 1874.

With the exception of a slight advance in Quincy, the following list of copper stocks has declined, as compared with our last: Allouez has been pretty freely dealt in during the past week at figures ranging from $7 25 to $9. With the exception of a few sales of Calumet and Hecla yesterday, at $128½ to $129, the transactions during the week have all been made at $130 per share. Quincy has sold at from $31 to $31½.

Allouez	7	Pewabic	—
Calumet and Hecla Co.	128	Phœnix	14
Copper Falls	11¾	Quincy	31¼
Central	—	Ridge	5
Franklin	—	Rockland	—

ROTARY REVERSIBLE HOISTING ENGINES.



We can refer to the satisfactory performance, during the last three years, of over

TWO HUNDRED

of these Engines, from the little Ash Hoister on steamships, raising 300 lb. to the Mining and Quarrying Engines, raising 6,000 to 60,000 lb. These Engines have no dead centers; one lever raises, lowers and holds the load; are simple, cheap, durable, effective.

We ask those looking for Hoisting Engines, and Mining Machinery to consult either of the following references: Eckley B. Coxe, Proprietor of Cross Creek Collieries, and Vice-Prest. of the Am. Inst. of Mining Engineers, Jeddo. Luzerne Co., Pa; J. H. Lyon. Pres't. Straitsville Coal Mines. Office 115 Broadway, New York; Geo. E. Hall, Pres't. Central Vermont Marble Co., Post Office Cleveland, Ohio; Ingersoll Rock Drill Co., No, 5 Park Place, New York; Gilbert Fowler, Chief Engineer Pacific Mail Steamship Co., Pier 42 North River, N. Y.; S. F. Shortland & Bro. Steam Lighters, 106 Wall st., New York; Divine Burtis, Jr., Contractor, Brooklyn, N. Y.; Wm. A. Lighthall. Consulting Engineer, Office 5 Bowling Green, N. Y.; Erastus W. Smith, Consulting Engineer, Office 42 Dominick st., New York. Every Engine fully warranted. Made only by

LIDGERWOOD MANUFACTURING CO.,
165 Pearl Street, New York.

SEND FOR CIRCULAR.

San Francisco Stock Market.

BY TELEGRAPH.

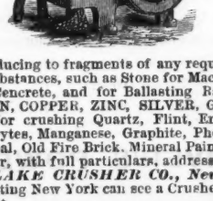
NEW YORK, September 24, 1874.

The following report, from the San Francisco Stock Board, is dated the 23d inst.: Crown Point has declined $5 per share, and Belcher is a little lower. These are the only exceptions to a general advance of the list. Yellow Jacket is a noteworthy feature of the report, having advanced to $107 per share. That is the highest quotation we have recorded in this list for a long time past. On the 17th inst. sales of Yellow Jacket were made at $109 per share, our quotation to-day showing a decline of $5 from that figure.

Savage	63¾	Imperial	10
Crown Point	55¾	Raymond & Ely	12¾
Yellow Jacket	107	Meadow Valley	5⅛
Kentuck	18¾	Eureka G. V Bid	7
Chollar Potosi	64	Ophir	—
Gould & Curry	25¾	Hale & Norcross	—
Belcher	64¾		

Blake's Patent Stone and Ore Breaker.

NEW PATTERN.



WITH IMPORTANT Improvements.

Used for reducing to fragments of any required size all hard and brittle substances, such as Stone for Macadam Roads, and for making Concrete, and for Ballasting Railroads; also for crushing IRON, COPPER, ZINC, SILVER, GOLD, and other Ores. Also for crushing Quartz, Flint, Emery, Corundum, Feldspar, Barytes, Manganese, Graphite, Phosphates, Plaster, Soapstone, Coal, Old Fire Brick. Mineral Paint, etc.

For Circular, with full particulars, address

BLAKE CRUSHER CO., New Haven, Ct.

Parties visiting New York can see a Crusher in operation at 137 Elm street.

Wm. B. BEMENT & SON
MANUFACTURERS OF
MACHINISTS TOOLS
OF ALL DESCRIPTIONS.
PHILADELPHIA. PA.

ENGINEER'S TRANSIT
FOR SALE.

A HELLER and BRIGHTLY Transit, with all the latest improvements, for sale cheap. Address "TRANSIT," office ENGINEERING AND MINING JOURNAL, New York.

MISCELLANEOUS.

EDWARD W. COIT,
IRON AND METAL
COMMISSION MERCHANT,

BOILER PLATES, BOILER TUBES
STRIP PLATES, SPECIALS.

No. 205½ Walnut street,

PHILADELPHIA, PA.

130th Auction Sale.
60,000
TONS SCRANTON COAL,
On WEDNESDAY, SEPTEMBER 30th, 1874.

NEW YORK, September 23d, 1874.

The Delaware, Lackawanna and Western Railroad Company will sell, by MESSRS. JOHN H. DRAPER & CO., Auctioneers, at the Company's Sales Room, 26 EXCHANGE PLACE, corner of William Street, NEW YORK, on WEDNESDAY, September 30th, at 12 o'clock, noon,

60,000 TONS

OF

COAL, FROM THE LACKAWANNA REGIONS,

of the usual sizes, deliverable at the option of the Company at their Coal Docks either at Hoboken or Elizabethport during the month of October, 1874.

The sale will be positive; each lot put up will be sold to the highest bidder; no bids, in any form whatever, being made for account of, or on behalf of, the Company. The conditions will be fully made known at the time of sale.

TERMS: FIFTY CENTS PER TON, payable in current funds, the day of sale, and the balance, within ten days thereafter, at the office of the Company.

SAMUEL SLOAN, President.

Colorado Bureau of Mines,
383 Larimer Street,
DENVER, COL

Authentic Statistics of Mines and Mining Property in Colorado compiled and recorded

Mining Property bought and sold on Commission.

Reliable information given upon application by parties interested.

Address as above.

HIERO B. HERR,
Consulting Engineer and Sup't.

E. F. ADAMS,
Engineer and Assayer.

MISCELLANEOUS.

RIEHLE BROS.,
650 North Ninth Street, Philadelphia.
New York, 93 Liberty St., Pittsburgh Store, 285 Liberty Street.

SCALES.

The Celebrated Stock House Scale, New Style Testing Machines, All Sizes. Iron Lever Railroad Track Scales. Patented First Power Lever Wagon Scale, for Coal Dealers. Parallel Crane Beams and Mortising Machines. Hydraulic Jacks.

COLORADO BUREAU of MINES
OFFICE: 383 Larimer Street,
DENVER, - - - - - COLORADO.

The millions of wealth locked up in the momntains of Colorado, awaiting the power of the capitalist to bring them under his control, demand more cogent means than have hertofore existed of placing before him a reliable record and faithful description of the many mining properties now developed, and those yet to be developed, which are, or may be, for sale or to let, and thus encourage capital to look with more favor and confidence upon the mining industry of this Territory as being the best field for investment within its reach.

To satisfy this demand, the

COLORADO BUREAU OF MINES

has been established, and attention is invited to some of the special reasons for its organization:

1. There has been no place where the mining statistics of the Territory were being collected as the industry developed, and where the progress of the development of its mineral wealth could be ascertained.

2. The present system of placing mines in the hands of agents who are at liberty to sell for what they can get, (often many times what the owner asks, and much more than they are worth, naturally tempting him to use deception in various ways, has brought such odium upon the mining industry of this region, in the minds of many, that their confidence has been lost, and much capital which should, and otherwise would come here, seeks investments elsewhere.

3. By dealing directly with the owner, through the Bureau, *which shall in no case receive any other remuneration than the established commission*, property can be secured at less than its real value, instead of the exorbitant prices sometimes obtained through unscrupulous agents.

The objects of the Bureau are to afford a reliable medium of exchange between buyer and seller of mining interests; to give mine owners an opportunity of placing a description of their property on record, and to display specimens of the same in a public office where they may be seen by persons visiting the Territory; to place within reach of capitalists reliable information concerning mining property which may be for sale or to let; and by conducting an honest and legitimate commission business to sustain the fair fame so justly due Colorado as an exceedingly rich repository of mineral wealth.

The office of the Bureau, located in Denver, Colorado, has the necessary requirements for displaying such specimens of ore as are sent for exhibition, and record books are provided in which is kept a full and complete record of each property placed in the hands of the Bureau, and such other mining facts and figures as may be of interest and use to those wishing to engage in the mining industry of the Territory.

Reliable agencies are being established in the principal cities in the States and Europe, through whom such information as the Bureau can secure may be obtained upon short notice by persons desiring to invest. *Such information will always be based upon personal examination made by the Engineers of the Bureau*, unless otherwise stated in the letter of information.

Prices are fixed by the owner, and not by the Bureau, or any of its agents; and the commission charged by us, paid by the seller.

It is not presumed or desired that the buyer will rely upon our information in purchasing, but that our representations will warrant him in sending his own engineer to make an examination without the fear of incurring an expense, only to find the accounts greatly exaggerated, and a purchase impossible.

The confidence we have in the success of our undertaking is principally due to the fact that the day for legitimate mining, based upon established business principles, has dawned upon Colorado, and the time for sinking fortunes in worthless "Discovery Shafts" is passing rapidly away.

We invite all owners of mines in Colorado, whether they are for sale or not, but particularly those who desire to place their property on the market, to send us specimens and descriptions of the same, and to communicate with the Bureau in relation thereto.

We also solicit correspondence and personal enquiry from capitalists who may contemplate investment in this most prolific and inviting field of enterprise.

Address, Colorado Bureau of Mines, Denver, Colorado.

H. B. HERR,
Consulting Eng. and Supt.

E. FRANK ADAMS,
Engineer and Assayer.

SCHOOL OF MINES, COLUMBIA COLLEGE.

FACULTY.—F. A. P. BARNARD, S.T.D., LL.D., PRESIDENT, T. EGLESTON, JR., E.M., Mineralogy and Metallurgy; F. L. VINTON, E. M., Civil and Mining Engineer; C. F. CHANDLER, PH. D., Analytical and Applied Chemistry; JOHN TORREY, M.D., LL.D., Botany; C. A. JOY, PH. D., General Chemistry, W. G. PECK, LL.D., Mechanics; J. H. VAN AMRINGE, A.M., Mathematics; O. N. ROOD, A.M., Physics; J. S. NEWBERRY, M.D. LL.D., Geology and Paleontology. Regular courses in Civil and Mining Engineering; Metallurgy; Geology and Natural History; Analytical and Applied Chemistry. Special students received for any of the branches taught. Particular attention paid to Assaying. For further information and catalogues, apply to

DR. C. F. CHANDLER,
Dean of the Faculty.

Nov. 21:1y

COAL SHIPPERS.

COXE BROS. & CO., CROSS CREEK COLLIERY, MINers and Shippers of the Celebrated

Cross Creek Free Burning Lehigh Red Ash COAL.

FROM THE BUCK MOUNTAIN VEIN.

Unexcelled for Steam, Sugar House and Domestic use.

WESTON, DODSON & CO., Sole Agents,

General Office: Bethlehem, Pa.
Branch Office: 206 South Fourth street, Philadelphia,
Agents in New York, MEEKER & DEAN,
Room 16 and 18 Trinity Building.

WILKESBARRE COAL,

DELIVERED DIRECT FROM THE MINES OF

THE WILKESBARRE COAL AND IRON COMPANY,

OR FOR RE-SHIPMENT AT

Port Johnston and Hoboken.

OFFICE, 80 BROADWAY, NEW YORK.

Dec. 23-1y

C. A. BLAKE & CO.,

Agents for the sale of

Hillside Coal and Iron Company's

COAL.

Docks for the receiving and shipping of Coal and other heavy freights,

OFFICES:

BUFFALO,

7 Main street,

Waverley, opposite Erie Railway Depot.

RED BANK MINING COMPANY

ARE PREPARED TO SUPPLY THEIR

GAS COAL AND CANNEL

rom their Colliery near Bethlehem, Clarion County, Pa. These mines are situated directly on the line of the Bennett Branch of the Alleghany Valley R. R. (just completed) and only 20 miles from its junction with the Main Line at Red Bank. This position enables them to supply Gas Companies **in any part of New York State, and Northern Pennsylvania, by Rail direct from the Colliery at all seasons of the year**—or to points on the **Canals or Lakes,** during navigation *via* **Buffalo or Erie.**

The **Gas Coal** (Red Bank Orrel) is specially adapted to **Gas Manufacture,** its yield being as large as that of any Caking Coal in the market, of easy purification and good illuminating power.

The Cannel is superior to any of the Ohio Cannels, obtainable and can be delivered in any required quantity, from one car and upwards. For particulars as to price, etc., apply to

BIRD, PERKINS & JOB,

P. O. Box 5623. GENERAL AGENTS, 27 South st., N. Y.

DETMOLD & COX,

ANTHRACITE AND BITUMINOUS

COALS.

OFFICE:

40 TRINITY BUILDING, NEW YORK.

January 23:1y

BORDA & KELLER,

KOH-I-NOOR COAL.

Old Company—Lehigh—Wilkes-Barre—Plymouth, Red Ash—on board at Philadelphia.

OFFICES:

346 Walnut St., Philadelphia
77 State St., } Boston,
5 Doane St., }
Wharf No. 4, Port Richmond.

"GIFFARD'S INJECTOR" BOILER FEEDER—Sellers' New Improvements.

New Patterns, Simple, Effective.

No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 10.
10 H. P.	25 H. P.	45 H. P.	70 H. P.	100 H. P.	140 H. P.	190 H. P.	275 H. P.
$18.	$25.	$35.	$45.	$55.	$65.	$75.	$95.

WM. SELLERS & CO., Philadelphia.

Send for circular giving particulars.

New York Office, 93 Liberty Street.

FREDERIC A. POTTS,

WHOLESALE

COAL AND IRON MERCHANT.

ANTHRACITE AND BITUMINOUS COALS,

Embracing Old Company Lehigh (Summit Hill), Room Run, (Free Burning White Ash), Plymouth Wyoming Red Ash Coal, also the celebrated Baltimore vein Wilkesbarre Coal, Hampshire and Barton George's Creek Coal.

OFFICES;

110 Broadway, New York,

P. O. Box 3404,

[METROPOLITAN BANK BUILDING,]

No. 33 Westminster Street, Providence.

July 4-1y

WM. BORDEN. L. N. LOVELL.

BORDEN & LOVELL,

CUMBERLAND COAL,

FOR RAILROAD, STEAMSHIP AND GENERAL USES.

Unexcelled in quality by any from this region. Shipments made at Georgetown, D. C.; Baltimore, Md.; South Amboy, N.J

OFFICES;

No. 70 and 71 WEST STREET, NEW YORK.

AGENTS FOR THE SALE OF

FALL RIVER IRON WORKS COMPANY'S NAILS, BANDS, HOOPS AND RODS.

STEPHEN S. LEE & SON.,

Miners and Shippers of

GEORGE'S CREEK COAL.

SWANTON MINES,

No. 49 West Lombard street,

BALTIMORE.

BIRD, PERKINS & JOB.

GAS COALS AND CANNEL.

FROM THE

Westmoreland—Cannelton—Red Bank—Youghiogheny and Provincial Mines.

103 State St., Boston.,
27 South St., New York.

MARYLAND COAL CO.

MINERS AND SHIPPERS OF

GEORGE'S CREEK CUMBERLAND COAL.

OFFICES

Nos. 15 & 17 Trinity Building, New York

The Fletcherville Blast Furnace Co.

Manufacture Charcoal Pig Iron exclusively from New-Bed Pure Magnetic Ore, suitable for Bessemer, Malleable and Car-wheel purposes, or for Foundry use where very soft and strong iron is required.

Analysis of Average New Bed Pure Ore.

Metallic iron	68. 24
Oxygen with the iron	26. 01
Water	.38
Insoluble Siliceous matter	4. 32
Sulphur practically	none.
Phosphorus	.038
Alumina	.28
Lime	.14
Undetermined matter and loss	.592
	100.000

Analysis of No. 1 Bessemer Pig.

Undetermined matter and loss	.134
Silicon	1.019
Carbon	3.821
Phosphorus	.048
Sulphur practically	none.
Calcium	.140
Metallic iron	94.838
	100.000

WITHERBEES & FLETCHER,

Port Henry, Essex County, N. Y.

Furnace at Fletcherville, near Mineville, N. Y.

Diamond-Pointed ROCK DRILLS

Recent improvements in connection with the celebrated LESCHOT'S patents have increased the adaptability of these drills to every variety of ROCK DRILLING. Their use, both in this country and in Europe, has sufficiently established their reputation for efficiency and economy, over any other now before the public.

The Drills are built of various sizes and patterns, WITH and WITHOUT BOILERS, and bore at a uniform rate of THREE TO FIVE INCHES PER MINUTE in hard rock.

They are adapted to CHANNELLING, GADDING, SHAFTING, TUNNELLING and open cut work; also to DEEP BORING for TESTING the VALUE OF MINES and QUARRIES. TEST ORES taken out, show the character of mines at any depth. Used either with steam or compressed air. Simple and durable in construction and never need sharpening.

Manufactured by

THE AMERICAN DIAMOND DRILL CO.,

No. 61 Liberty street,

jan31 New York.

BALTIMORE COPPER WORKS

(Canton.)

POPE, COLE & CO.

ARE NOW PURCHASING

COPPER ORES,

and smelting and refining at these extensive works, where, with experienced workmen and extraordinary facilities, we are turning out Ingot and Cake Copper of unequalled purity and toughness.

We are prepared to buy *Ores,* Matte, Regulus and other furnace material, in any quantities.

At *Salt Lake City,* Mr. Geo. J. Johnson, our representative, will receive, sample, assay and pay cash for ores of that vicinity

In *San Francisco* we are likewise represented by Mr. Horace D. Ranlett, 218 California street.

Office, No. 57 South Gay street, *Baltimore, Md.*

OLIVER'S POWDER.

This Powder recommends itself for its

SUPERIOR STRENGTH

and

FREEDOM FROM SMOKE

Direct orders to

PAUL A. OLIVER,

dec9-1y WILKESBARRE, PENN.

BLOW-PIPE APPARATUS FOR SALE.

A complete LINKE'S Apparatus, new, and with full set of pure re-agents, to be sold at less than cost in Germany. Address "BLOW-PIPE," office ENGINEERING AND MINING JOURNAL.

MISCELLANEOUS.

HALLIDIE'S
ENDLESS WIRE ROPEWAY,

[WIRE TRAMWAY,]

FOR THE

Rapid and Economical Transportation of

ORES, STONE, COAL, Etc., Etc.,

OVER MOUNTAINOUS ROADS.

Covered by numerous United States Patents.

☞ Has been in use over two years on the Pacific Coast, and is the most effective system ever matured.

The Superintendent of the Emma Hill Consolidated Mining Co., Utah, says: "The line has been working since August, 1872; is as good to-day as when built. No other system could do the work as cheaply or as well."

The Superintendent of the Chicago Silver Mining Co., Salt Lake, says: "For transporting ores down our rough cañons and rugged mountains, there is nothing yet devised that will compare with it, for long and short distances."

The Superintendent of the Morning Star Mining Co., of Freiberg, Nevada, says: "It is a perfect success, discharging ten tons of ore per hour with two men's labor."

Send for Circular to

A. S. HALLIDIE,

No. 113 PINE STREET, San Francisco, Cal.

MANUFACTURERS OF MACHINISTS' TOOLS OF EVERY DESCRIPTION — NEW YORK STEAM ENGINE CO.

Having added a

SCOTT'S GEAR MOULDING MACHINE

To our Foundry, we are now prepared to furnish,

WITHOUT CHARGE FOR PATTERNS,

GEAR-WHEELS

OF ALL DESCRIPTIONS,

AT THE

SHORTEST NOTICE.

Work warranted perfectly accurate. Send for circular giving price, and directions for ordering.

N. Y. Steam Engine Co.,
98 Chambers St.,
N. Y.

98 CHAMBERS ST. N.Y.

No Frog, No Foot.
No Foot, No Horse.
THE IMPROVED
Goodenough
HORSE SHOE
All Fitted for Use.
NO FIRES REQUIRED.
Send for Circulars to
Box 3044, P. O.,
NEW YORK.

POWER HEADING

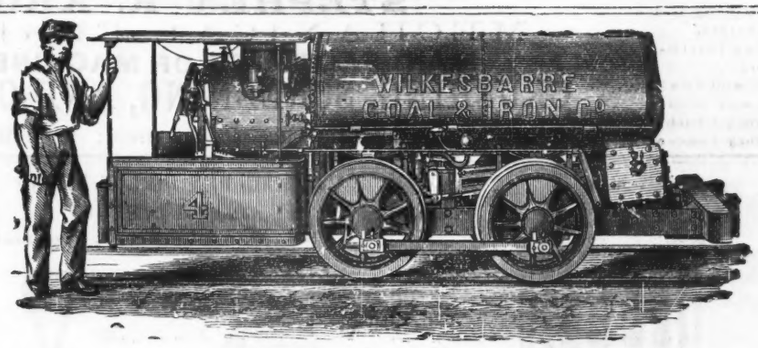
VIEWS OF BUILDINGS — PORTRAITS OF MACHINERY

CROSSCUP & WEST,
ENGRAVERS ON WOOD,
702 CHES'T. ST.
PHILAD'A.

BOOK ILLUSTRATIONS — POSTERS SHOW CARDS

COLOR WORK

MISCELLANEOUS.



IMPROVED DIRECT-ACTING MINING LOCOMOTIVES.

Gauge, two feet six inches or upwards; Height above rail, five feet four inches; Width over all, five feet one inch Adapted to burn Anthracite or Bituminous coal or coke.

Materials and Workmanship Equal to those in Full Gauge Railroad Locomotives,

Guaranteed to pass curves of twenty-five feet radius and haul, on a level track in good condition,

Three Hundred and Forty Gross Tons of Cars and Load.

For Photograph and full particulars, address **BURNHAM, PARRY, WILLIAMS & CO.**

Feb 7-1y:eow Baldwin Locomotive Works, Philadelphia.

COUNCIL BLUFFS IRON WORKS,

CAPITAL, $100,000.

Manufacturers of Mining Machinery, Quartz Mills, Smelting Furnaces, Pumping and Hoisting Machinery,

IRON AND BRASS CASTINGS OF ALL KINDS.

OFFICE AND WORKS LOCATED AT COUNCIL BLUFFS, IOWA, at the Eastern Terminus of the Union Pacific Railroad.

jan17 1y Address **R. J. CORY, Secretary.**

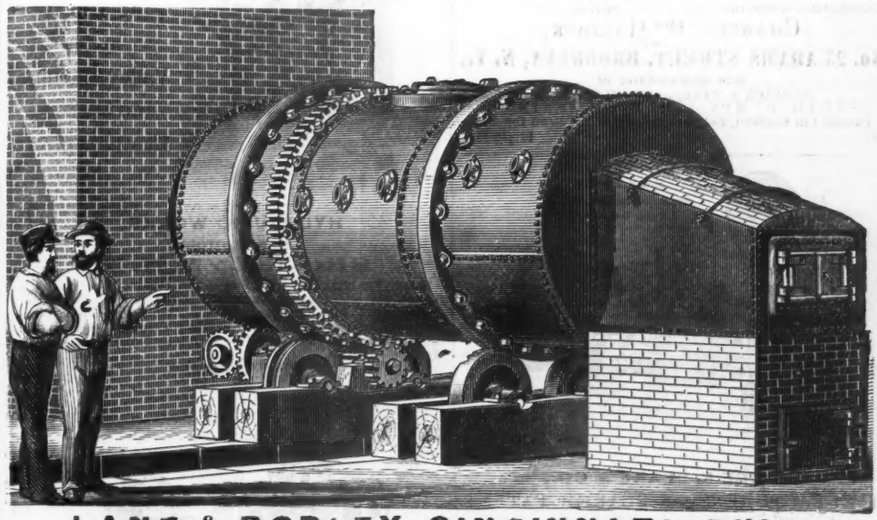
LEHICH ZINC COMPANY.

GORDON MONGES, Treasurer — B. C. WEBSTER, President.

WORKS, BETHLEHEM, PA. OFFICE, 333 Walnut Street, Philadelphia

JOHN JEWETT & SONS, AGENTS, 182 FRONT STREET, NEW YORK.

OXIDE OF ZINC, SPELTER, SHEET ZINC.



LANE & BODLEY, CINCINNATI, OHIO,

SOLE MANUFACTURERS

OF

BRÜCKNER'S PATENT

REVOLVING CYLINDERS

For Roasting, Desulphurizing and Chloridizing Ores. Also Steam Engines, Boilers, Saw Mills and Mining Machinery.

Illustrated catalogues and prices furnished on application.

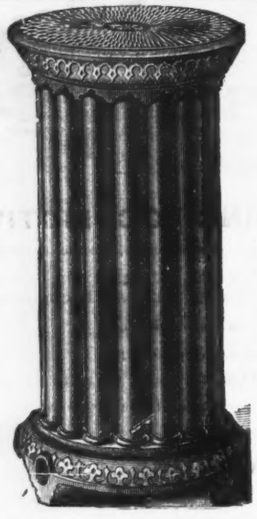
LANE & BODLEY,
John and Water sts., Cincinnati.

Jaw Crushers.
Steel Crushing Rolls.
Concentrators,
Revolving Screens.
Elevators.
Hangers and Shafting.
Pulleys and Belting.
Laboratory Crushers.
Laboratory Concentrators.

STEPHEN R. KROM,
MECHANICAL ENGINEER,
MANUFACTURER OF MACHINERY FOR
CRUSHING, SCREENING, AND CONCENTRATION OF ORES,
For Pamphlets and information, address: S. R. KROM, 266 Eldridge St., New York.

PLANS FURNISHED FOR Ore Dressing Works.

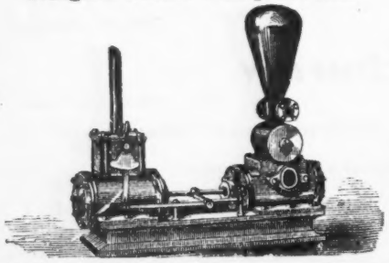
NASON'S VERTICAL TUBE RADIATORS



IN VARIOUS SIZES AND PATTERNS.

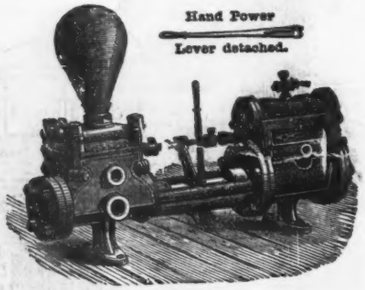
THE NASON MANUFACTURING CO., 61 Reekman street, corner of Gold street.—WROUGHT and CAST IRON PIPES; all kinds of STEAM and GAS FITTINGS; Apparatus for WARMING and VENTILATING BUILDINGS. HENRY R. WORTHINGTON, Prest.
C. W. NASON, Vice-Prest. W. S. LEDYARD, Treas.

Niagara Steam Pump Works.



This Pump has taken the first premium at every Fair in the United States where there has been a practical test
CHARLES B. HARDICK,
No. 23 ADAMS STREET, BROOKLYN, N. Y.,
Sole Manufacturer of
HARDICK'S PATENT DOUBLE-ACTING
STEAM PUMPS AND FIRE ENGINES,
Patented in England, Belgium and France. Send for circular. fe9-13-1y

Hand Power
Lever detached.

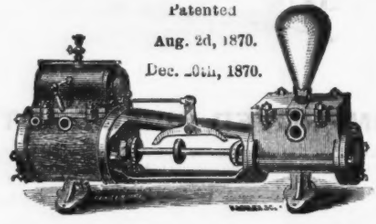


GEORGE F. BLAKE & CO.,
MANUFACTURERS OF BLAKE'S PATENT
STEAM PUMPS,
No. 79 LIBERTY STREET, NEW YORK.
Factory 51 Chardon St., Boston, Mass.

A specialty made of the manufacture of DOUBLE-ACTING PLUNGER PUMPS for mining purposes—combining economy of space, capacity, and great durability. All wearing parts made of composition metal.
Also, Boiler Feed Pumps, Fire Pumps, Tank Pumps, Wrecking Pumps, etc., etc.
Send for Illustrated Price Circular. m26ym

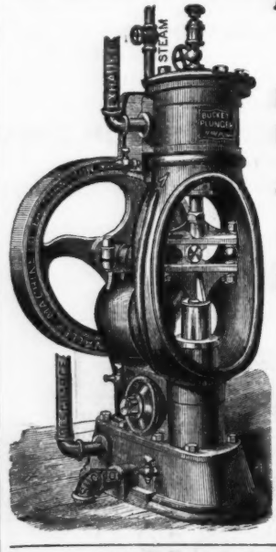
THE SELDEN DIRECT-ACTING
STEAM PUMP
A. CARR, Manufacturer & Proprietor.

Patented
Aug. 2d, 1870.
Dec. 20th, 1870.



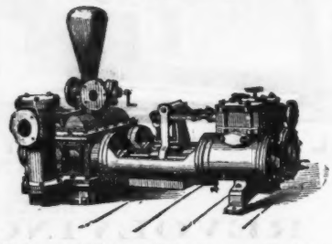
Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to ALL PURPOSES for which Steam Pumps are used.
AS A MINING PUMP
It is unsurpassed. Also,
STEAM, GAS AND WATER PIPE, BRASS WORK.
Steam and Water Gauges, Fittings, etc. etc.
CARR PATENT STEAM RADIATOR.
Send for Price-List and Circulars.
Address A. CARR,
43 Courtlandt Street, New York.

Improved, 1874.



BUCKET-PLUNGER
Steam Pumps
ALWAYS RELIABLE.
MADE
BY THE
Valley Machine
COMPANY,
Easthampton,
Massachusetts.

HYDRAULIC WORKS.
MANUFACTORY,
BROOKLYN, N. Y.
Steam Pumping Engines, Single and Duplex Worthington's Patent, for all purposes, such as Water Works Engines, Condensing or Non-condensing; Air and Circulating Pumps, for Marine Engines; Blowing Engines; Vacuum Pumps, Stationary and Portable Steam Fire Engines; Boiler Feed Pumps, Wrecking Pumps,
MINING PUMPS.

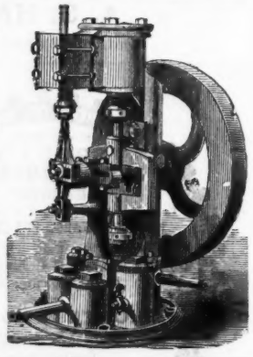


Water Meters, Oil Meters; Water Pressure Engines. Steam and Gas Pipe, Valves, Fittings, etc. Iron and Brass Castings.
Send for Circular.
H. R. Worthington,
Jan2-1y 239 Broadway, New York.

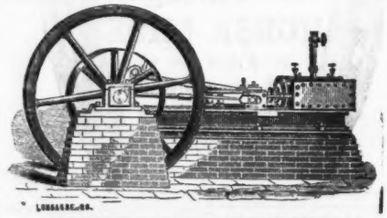
BAXTER
STEAM ENGINE

FOR SALE BY
WILLIAM D. RUSSELL,
GENERAL AGENT FOR THE BAXTER STEAM ENGINE CO.,
25 PARK PLACE, NEW YORK.
SEND FOR CIRCULARS & PRICE LIST

J. CLAYTON'S
Patent Crank and Fly Wheel
UPRIGHT
PUMP,
Strong, Durable, and well made, a Double-Acting
Steam Pump.
Price only $95.
JAMES CLAYTON,
14 Water st.
Brooklyn, N. Y.



The Pulsometer.
The **simplest, most durable** and **effective** Steam Pump now in use. Will pump **gritty** or **muddy** water without wear or injury to its parts. It cannot go out of order.
BRANCH DEPOTS:
104 Sudbury street, Boston.
1327 Market street, Philadelphia,
59 Wells street, Chicago,
South Western Exposition, New Orleans,
811 and 813 North Second street, St. Louis.
C. HENRY HALL & CO.,
20 Cortlandt Street, New York.



CAMPBELL & RICKARDS,
BUILDERS OF ENGINES AND TRAVELING CRANES,
607 and 609 Commerce street, Philadelphia, Pa.
Estimates furnished on application.

WOOD ENGRAVING
EXECUTED AT THE OFFICE OF
The Engineering and Mining Journal,
27 PARK PLACE, NEW YORK CITY.

RICHARD P. ROTHWELL
Mining Engineer.
Office of the Engineering and Mining Journal,
27 PARK PLACE, NEW YORK.

Surveys, Examines and Reports on *Coal* and *Iron* Properties and Mines.
Advises on all questions of the Working and Management of Mines.

MAYNARD & VAN RENSSELAER,
Mining and Metallurgical Engineers,
Experts in Iron, Analytical Chemists,
24 Cliff Street, New York.
GEO. W. MAYNARD, SCHUYLER VAN RENSSELAER.

STUART M. BUCK,
MINING ENGINEER,
Kanawha and Ohio Coal Company.
COALBURG, WEST VIRGINIA.
Examines and reports on Coal Lands, and consults on the opening and working of Mines.

IRVING A. STEARNS,
MINING AND CIVIL ENGINEER,
Wilkes-Barre, Penn'a.
Examines and Surveys Mines and Mineral Properties.
Furnishes Working plans and Estimates for mines, improvements, and superintends the establishment and working of mines. Dec. 16-tf

W. B. COGSWELL,
Civil & Mechanical Engineer.
SPECIALTY:—Blast Furnace Construction.
P. O. Address
Franklin Iron Works,
Nov. 12:1y Oneida County, N. Y.

RICHARD H. BUEL,
Mechanical Engineer,
80 BROADWAY.
Plans and estimates prepared. Machinery and processes examined and tested.

E. CYBBON SPILSBURY,
Consulting Civil & Mining Engineer.
Mining Properties examined and reported on. Plans and estimates made for every kind of Mining machinery.
The concentration of ores a specialty.
187 Broadway, Street level,
New York.

A. W. HALE, A. M., E. M.
CIVIL AND MINING ENGINEER,
AND
ANALYTICAL CHEMIST,
LABORATORY, 71 BROADWAY, NEW YORK.

THOMAS M. DROWN,
ANALYTICAL CHEMIST,
LAFAYETTE COLLEGE,
EASTON, PA.

D. ERNEST MELLISS, A. M., Ph. D.,
52 BROADWAY, NEW YORK,
MINING ENGINEER AND GEOLOGIST,
Analytical and Consulting Chemist
REFERENCES: W. Butler Duncan, Esq., (*Duncan, Sherman & Co.*); John J. Cisco, Esq., (*John J. Cisco & Son*); Walter Williams, Esq., (*Chairman Staffordshire Iron Masters' Association, England*); Charles F. Chandler, Ph. D., (*Dean of Faculty, School of Mines, New York*); Charles A. Joy, Ph. D., (*Professor Chemistry, Columbia College, New York*); J. A. Newberry, M. D., (*Professor Geology, School of Mines, New York*); C. P. Huntington, (*President C. & O. R. R.*)

C. A. STETEFELDT,
MINING ENGINEER
AND
METALLURGIST,
Office Stetefeldt Furnace Company,
No. 411½ CALIFORNIA STREET,
San Francisco, Cal.

Mass. Institute of Technology.
Fall Entrance Examinations, Sept. 23 and 24, at 9 A. M.
For Catalogue and June Entrance Examination Papers, address Prof. SAMUEL KNEELAND, Sec'y, Boston, Mass.

THE IRON-MASTERS'
LABORATORY.
Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.
No. 339 Walnut Street, Philadelphia.
J. BLODGET BRITTON.

This Laboratory was established in 1866, at the instance of a number of practical Ironmasters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of pure Iron in an ordinary Ore	$4 00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do.	12 50
For each additional constituent of usual occurrence	1 50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur and Phosphorus in Iron or Steel	12 50
For each additional constituent of usual occurrence	4 00
For the per cent. of Carbonate of Lime, and Insoluble Silicious Matter in a Limestone	10 00
For each additional constituent	2
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12

For determining the constituents of a Clay, Slag, Coke, or of an Ash of Coal, the charges will correspond with those for the constituents of an ore.
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.
Printed instructions for obtaining proper average samples for analysis furnished upon application.

IRON AND COAL PROPERTIES
Examined and Reported upon for Practical Purposes, by Experienced and Thoroughly Competent Mining Engineers and Experts.
Jan. 6:tf

E. B. BENJAMIN,
10 BARCLAY STREET,
NEW YORK CITY,

Importer and Manufacturer of all kinds of apparatus for mineral and chemical analysis. *Laboratory and Assaying Tools, Prospecting and Mining Implements, accurate* Balances and Weights, Furnaces, Touqs, Freiberg Scorifiers, French Cupels and Assay Cups, Flasks, Dippers, *Crucibles*, etc. Complete *Blowpipe* sets for gold and silver tests, Compasses, Becker's Ingot Moulds, Lenses, Evaporators, etc., etc.

For better description of apparatus and prices, see the large *Illustrated Catalogue*, beautifully gotten up, in cloth,

Price - $1 50 per Copy.

1y-apr8

ARTHUR VON BRIESEN
SOLICITOR OF AMERICAN AND FOREIGN PATENTS,
258 BROADWAY, (Cor. Warren St.,)
ATTORNEY & COUNSELLOR AT LAW IN PATENT CASES. **NEW YORK.**
All orders promptly attended to. Information gratis.

HELLER & BRIGHTLY, Engineering and Surveying Instruments, 33 N. Seventh St., Philadelphia.

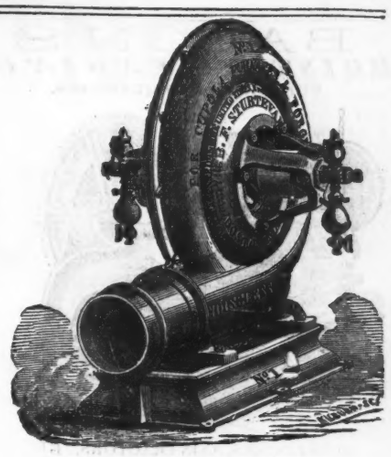
Without decreasing size of any part of our "Engineers' Transit" we have reduced the weight one-half. An ordinary Transit Telescope magnifies from 10 to 12 diameters, our new Transit Telescope (length 10½ inches, shows objects erect and not inverted) magnifies 28 diameters and will read time on a watch-dial at 983 feet. For description of our new Mining Transit (weight 5½ lbs.) and Plummet Lamp see Van Nostrand's Engineering Magazine, June, 1873.

TRADE MARK.

REG. JUNE 22, 1871.

Extract from report of Committee of Civ. Engs. appointed by Franklin Inst. to examine H. & B's new Transit: (Dec. 1871.) "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviation which they have made from the common styles of Transit are decided improvements."
JOHN C. TRAUTWINE, Chairman.

WM. J. YOUNG & SONS,
43 North Seventh Street,
PHILADELPHIA.
Engineering Instrument Makers and Inventors and Introducers of Transit Instruments.
IMPROVED TRANSITS WITH TELESCOPES GUARANTEED SUPERIOR TO ALL OTHERS.
Improved Miners' Transits.
Photographs furnished on application.



B. F. STURTEVANT'S
PATENT IMPROVED
PRESSURE BLOWER,
FOR CUPOLA FURNACES AND FORGES.
Also manufacturer of the Sturtevant Patent Improved Fan Blower and Exhaust Fan. Send for illustrated catalogue.
B. F. STURTEVANT, 72 Sudbury street, Boston, Mass.
n29:1y

FOR SALE—AN UNFINISHED IRON, TWIN SCREW STEAM VESSEL, having double bottom and water-tight compartments.

Length between Perpendiculars	390 feet.
Breadth of Beam	45 "
Depth to Main Deck	24½ "
Displacement at 22 feet draught	6,000 tons
Area of Midship Section	800 sq. ft.
Number of Transverse Bulkheads	7
ENGINES.	
Two pairs, each pair driving one Screw.	
Diameter of Steam Cylinder	72 inches.
Stroke of Piston	45 "
Surface Condensers, area	12,560 sq. ft
SCREWS.	
Diameter	18 feet.
Pitch	27 "
Number of Blades	3
BOILERS.	
Ten in number; Ordinary Horizontal Fire Tubular Type.	
Total Heating Surface	28,000 sq. ft.
Grate Surface	876 "

This vessel was intended to be completed for the State of New Jersey as an Ironclad. The plans were prepared and the work was carried on under the direction of Gen. George B. McClellan, U. S. A. All materials, and the workmanship are guaranteed to be of the best possible description.

The funds appropriated for the purpose of completing the vessel not proving sufficient, the Legislature of the State of New Jersey has directed that a sale be made to the highest bidder. A Commission, consisting of

His Excellency Gov. JOEL PARKER, of Trenton,
Vice Chancellor AMZI DODD, of Newark,
Honorable Messrs. W. W. SHIPPEN, and S. B. DOD, of Hoboken,

has been appointed to effect such sale.

Bids endorsed "PROPOSALS FOR PURCHASE OF IRON STEAMER, OR OF PARTS THEREOF," may be addressed to the GOVERNOR OF THE STATE OF NEW JERSEY, by whom they will be received at Trenton, N. J., until 12 o'clock M., on the second day of November next, at which time they will be publicly opened.

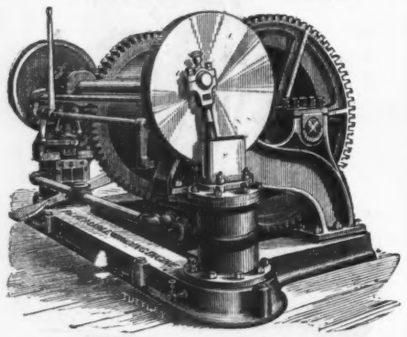
Blanks for proposals, and a pamphlet containing a detailed description of the vessel, as nearly completed, except as to armor and armament, may be obtained by addressing either member of the Commission or the undersigned.

Permission to examine the vessel, and to inspect the premises, may be obtained (by intending purchasers) on application at the Dry Dock, where the ship now lies, or to the consulting Engineer to the Commission, who will be prepared to exhibit drawings, to explain the structure of hull and machinery and to give any other information respecting the vessel.

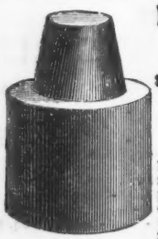
R. H. THURSTON,
Consulting Engineer to the Commission, Hoboken, New Jersey.

COOPER'S GLUE AND REFINED GELATINE
COOPER, HEWITT & CO.,
NO. 17 BURLING SLIP, NEW YORK.
Bar Iron, Braziers' Rods, Wire Rods, Rivet and Machinery Iron, Iron and Steel, Wire of all Kinds, Copperas, &c., &c.
RAILROAD IRON, COOPER WROUGHT IRON BEAMS AND GIRDERS,
Martin Cast-Steel, Gun-Barrel and Component Iron,
PUDDLED AND REFINED CHARCOAL BLOOMS,
Ringwood Anthracite and Charcoal Pig Iron
Works at Trenton and Ringwood, N. J.
may 1:1y

BACON'S
HOISTING ENGINES
FOR MINES AND QUARRIES,



STEVEDORES, CONTRACTORS, ETC.
20 different styles, adapted to every possible duty.
Portable and Stationary
ENGINES.
BOILERS OF ALL KINDS,
Copeland's Wire Rope and Mining Machinery.
COPELAND & BACON,
M'f'rs, 85 Liberty st., New York.
feb. 7'73m



MINING MACHINERY.
MOREY & SPERRY,
88 Liberty St., New York.

Steel Shoes & Dies,

Made by our improved process. After many years of patient research and experiment, we have succeeded in producing STEEL SHOES AND DIES FOR QUARTZ MILLS, which are unequaled for strength, durability, and economy; will wear three times longer than any iron shoes. We manufacture, and contract to erect Gold and Silver Reducing and Amalgamating Machinery in all its details. Pans, Separators, Concentrators, Jigs, Rock Breakers, and Furnaces. *Furnishers of Mining Supplies.* All Orders promptly filled. Examinations solicited.

MOREY & SPERRY.

☞ Look at following extract, Ingersoll Co.'s letter of excuses, ENGINEERING AND MINING JOURNAL, June 6, and compare with their advertisement: "I had *two* drills at the mine from the commencement, one beginning work on the 4th of April, the other on the 7th of the same month, and both drills working until the 1st of May." Signed, C. N. ELLIOTT, Superintendent Ingersoll Rock Drill Co.
RAND & WARING D. & C. CO.

MORRIS, TASKER & CO.,
PASCAL IRON WORKS
PHILADELPHIA,
TASKER IRON WORKS,
NEWCASTLE, DELAWARE.

Office.....FIFTH AND TASKER STREETS, PHILADELPHIA.
Office and Warehouse.....No. 15 GOLD STREET, NEW YORK.
Office and Warehouse.....No. 36 OLIVER STREET, BOSTON.

Manufacturers of Wrought Iron Welded Tubes, plain, galvanized and *rubber coated*, for gas, steam and water. Lap-Welded Charcoal Iron Boiler Tubes, Oil-Well Tubing and Casing, Gas and Steam Fittings, Brass Valves and Cocks, Gas and Steam Fitters' Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved Coal Gas Apparatus, &c.

We would call Special Attention to our Patent Vulcanized Rubber-Coated Tube.
THOMAS T. TASKER, Jr. STEPHEN P. M. TASKER.

RAND AND WARING
DRILL AND COMPRESSOR COMPANY.
21 Park Row, Opposite New Post Office,
NEW YORK.

Send for Circulars.

Actual Work done at trial at Port Henry Mine.

		Rand.	*Ingersoll.*	*Waring.*
First Week,	feet,	459½	288	.....
Second "	"	459	257	136
		918½	545	136

1841. 1874.
Mt. Savage Fire Brick
For Blast, Smelting, Puddling and Glass
FURNACES,

Have stood the test of more than **33 Years** as unequaled by any Domestic or Foreign Article for Refractory Power.

Manufactured only by the
UNION MINING COMPANY
Of Alleghany County, Maryland.

For Circulars, Diagrams, and Price Lists apply to
JAMES S. MACKIE, Pres't., 71 Broadway, New York, or
JAMES A. MILLHOLLAND, Vice-Pres't.,
CHAS. M. MACGOWAN, 96½ Fourth Avenue, Pittsburgh, Pa., Sole Agent for Pittsburgh and the West.

Cazin's Combination Ore-Sizer and Concentrator One-Plunger System.

Covered by letters patent of July 2d, 1872, and recent application. Containing a sizing apparatus (revolving screen) delivering four sizes of ore to four rows of sieves, each row independent of the other, and each having 5 sieves, each row concentrating according to specific gravity, the special size of ores automatically fed into it, resulting in the simultaneous continual delivery of thoroughly separated materials, working 3d and 3d class ores into 1st class ores of perfect cleanness. It thoroughly separates native gold or copper from quartz or any other lode matter, galena and silver sulphurets from pyrites, baryta and quartz, and pyrites from quartz.

Added to a battery of stamps this machine constitutes a full system of ore-concentration sufficient, in most cases, for the requirement of Western mines with a capacity of 12 to 15 tons per 24 hours. For particulars apply to **F. CAZIN,** M. and C. E. at Denver, Colorado, Lock Box 2225, or 243 16th street.

THE INGERSOLL
ROCK DRILL CO.
5 PARK PLACE, N.Y.
OFFER THEIR MACHINES ON TRIAL AND CLAIM 40 PR. CT. INCREASED POWER OVER ANY DRILL IN EXISTENCE.
SEND FOR CATALOGUE.

Comparison of Rock Drills at Port Henry Mines, New York.

First week with **ONE** Ingersoll drill.....288 feet.
Second week " " " " .....257 "
545 "

First week with **THREE** Rand drills.....459½ ft.
Second week " " " " .....459 "
918½ ft.

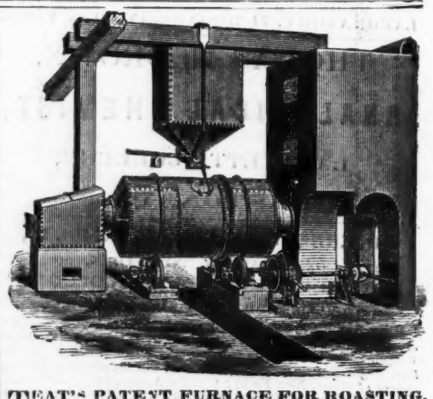
WARING'S IMPROVED SELF-FEEDING
ROCK DRILL

By far the most simple and effective machine for all descriptions of mining, railroad, and quarry work.

GEO. H. REYNOLDS, in his report of the trial of the Rand, Ingersoll and Waring Rock Drills, at the Port Henry Iron Ore Company's Mines, at Mineville, N. Y., April 20, 1874, states that one hole was drilled by the Waring Drill that could not be reached by either of the other machines, and unquestionably the mounting of this drill for all purposes of varying work is far superior to either of the others. The experiment is conclusive and satisfactory. Also Dealers in

AIR COMPRESSORS, PUMPS, &c.

WARING ROCK DRILL CO.,
187 Broadway, New York,
Street Level, (Rear).



TEAT'S PATENT FURNACE FOR ROASTING, Desulphurizing, Chloridizing and Oxidizing Ores, etc.—For the reduction of Gold, Silver, Lead, and other ores, saving a larger percentage, at less cost, than any other invention now in use. Chloridizing Silver ore more thoroughly, in less time, with less fuel, salt and labor; also, roasting Lead ore preparatory to smelting, better and cheaper than any other invention. The Furnace is so constructed that one man, of ordinary ability, tends five or more furnaces; controls them with ease; adding heat and air; stopping or starting at will; charging and discharging with ease. Also, Patent "Conveying Cooler," for conveying and cooling roasted ores, heating the water for amalgamation and the boilers at the same time. Saving the large space in mill (covered with brick or iron), and the labor of two men per day, exposed to the poisonous chlorine gases. Also, Patent Air Blast "Dry Kiln," for drying ores direct from the mine or breaker, saving fuel and labor heretofore necessary in drying ores for dry pulverizing. For description refer to ENGINEERING AND MINING JOURNAL, No. 9, August 29, 1874. For particulars address TEATS & BREED, No. 12 West 8th street, Cincinnati, Ohio.
Circulars, &c., will be furnished, if required.

Z. B. HEYWOOD & CO., Dealers in Hose, Belting, Packing, and all other kinds of Rubber Goods
303 CANAL STREET, NEW YORK.